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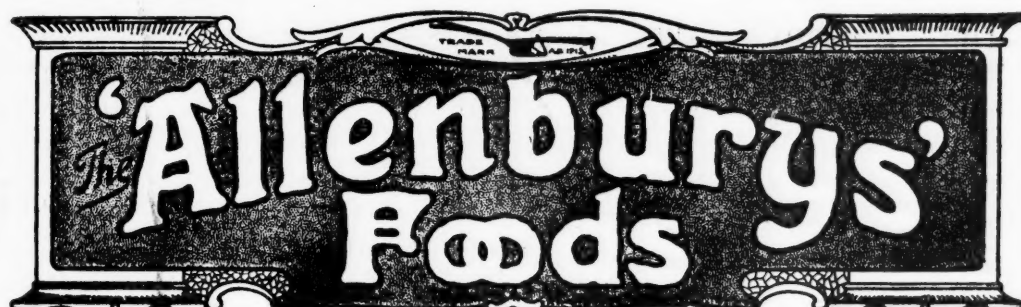
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THE MEDICAL JOURNAL OF AUSTRALIA.

VOL. I.—4TH YEAR.

SYDNEY: SATURDAY, JUNE 23, 1917.

No. 25.

EXPERIENCES IN MESOPOTAMIA.¹

By R. M. Allan, M.D., M.C. (Edin.),

Late Temporary Captain, Royal Army Medical Corps, Brisbane.

While my war experiences date back to September, 1914, I propose to confine myself entirely to work in Mesopotamia. I belonged to a British field ambulance attached to one of the Indian divisions.

Owing to the mixture of white and native troops, there are separate ambulance arrangements for each, though one doubts the need for it from the experience gained in this campaign.

Each division had two British and three Indian field ambulances. The former were officered by the Royal Army Medical Corps, and the latter by the Indian Medical Service. This number of ambulances seems excessive compared with the three of an English division, but there are important differences in the personnel. Though we only had five medical officers as against nine in the latter units, we scored as regards warrant officers. These were Eurasians for the British and natives for the Indian. All were qualified in India, and could be depended upon to carry on in one's absence. In addition, the British units had white non-commissioned officers and nursing orderlies, picked from first-line troops. The stretcher-bearers were entirely natives, including non-commissioned officers. These men were recruited from the large cities, and were of numerous castes, while others came from the semi-Mongolian State of Bhutan. But they proved to be magnificent material, and better than most white men for the work. There are certain physical characteristics of the country on which depended not only the plan of campaign, but also the methods of collecting and evacuating the wounded. The Tigris and Euphrates rise in the mountainous districts of Armenia, near Ezeroum. Their courses, while roughly parallel, only approximate near Bagdad, and finally combine thirty miles above Basra in one stream, called the Shatt-al-Arab. Both rivers in their long course run through a variety of country. Above Bagdad it is very mountainous, below stretches the vast plain of Mesopotamia. Beyond isolated villages on the river banks there is not a tree to be seen on the brown alluvial plains. The river banks are only three to five feet above the water level, and the course of the stream is very sinuous. The land is irrigated by small creeks with subsidiary channels. Below Kurna, at the juncture of the two rivers, stretches the palm belt for 70 miles, until the mangrove swamps on the shores of the Persian Gulf are reached. Great extremes of temperature are met with, ranging from below freezing point to 120 degrees in the shade. In

spring the snow melting in the Taurus range causes floods, which inundate the plains for miles. There are no roads, except one built by ourselves, and all transport is water-borne. In connexion with this, there is a current in the Tigris ranging from three to five knots. The river is very shallow, and navigable only for boats drawing up to five feet of water.

Finally, the only water supply for drinking purposes is the river itself. Any wells dug inland produce nothing but brackish water. From this it is evident that all operations must follow the river, not only for transport but also to obtain water. Men are exposed to extremes of temperature, and also to the many endemic diseases of the country. And owing to the contour there is little cover from hostile fire, so that the medical services must work under greater disadvantages than elsewhere. This was borne out by our greatly increased casualty list as compared with France.

We arrived from the Western front early in January, 1916, to find Kut besieged, and all troops being rapidly sent up to the front. Our own division was sent into action before the ambulances arrived, and this helped to cause the breakdown of the medical services which then occurred.

Basra was a typically dirty Turkish town, which was rapidly being transformed. The Sultan's Palace and the Customs House had been taken over for general hospitals. The troops lived out on the plains in palm leaf covered huts. The native storekeepers were doing a busy trade in tinned goods, and could hardly believe their good fortune in having cash payments instead of the Turkish credit system.

The river transport was most varied, comprising craft from India, Burma and Egypt. There were three classes of transport—paddle-wheelers, stern-wheelers, and tugs. Each of them had one or two barges in tow, laden with men and stores. The latter was mainly transported in large sailing vessels, called *Mahelas*. These held about 60 tons, and when becalmed were towed from the banks by a rope attached to the mast. The average time up to the front was five to seven days, while the *Mahelas* took five weeks.

The journey up stream was very monotonous, and resembled the Suez Canal in many places. At night all craft tied up, and near the front the bridge was sandbagged because of snipers. Portable filters were used to clarify the river water for drinking.

When we arrived the main front was on the left bank, but my division was ordered to advance up the opposite side. We pitched tents for our headquarters section at the river, and sent out a bearer section with one brigade. Equipment and transport were the first problems to be faced. We had left all our wheeled transport at the base, and did not see it again for months. Everything had to be cut down

¹ Read at a meeting of the Queensland Branch of the British Medical Association on May 4, 1917.

to an absolute minimum, and this showed the inadequacy of much of the equipment of a field ambulance. The panniers look well when they are packed, and contain a useful assortment of drugs and dressings. But to get what is often required means opening several boxes. So we began by repacking some with essentials and discarding the remainder. Each bearer section was given three pack mules for transport. The first carried a surgical pannier and another full of dressings. The second mule had the medical comforts pannier, and a reserve dressing box, while the third carried two *pakhals*, or tin receptacles full of drinking water. Entrenching tools were distributed between the three mules. For transport we had small two-wheeled carts drawn by a couple of mules. The carts were springless, and had an iron framework on which were placed two straw mattresses. These constituted our equivalent for motor ambulances, which were impracticable owing to the lack of tracks. The men carried their equipment, which was reduced to two blankets, ground sheet and overcoat. Officers were allowed twenty pounds of baggage, which was carried in one of the carts, with cooking utensils and reserve rations. They had to walk, and were encumbered by the variety of weapons hanging round their belts—haversack and rations, revolver and ammunition, water bottle, compass and field glasses.

Water discipline had to be enforced, as we were on a water ration. Fresh supplies came out daily from the river, but at first we only averaged one bottle per day, with none for washing purposes. One result of this was that we soon became infested with lice. The bearer section usually chose a site behind the brigade to which it was attached. If the brigade was in a laager we were in the centre of it. Each man dug a hole and covered it with his ground sheet. This was very snug until it rained, when our lot was not very enviable. We had some tents, which were used for patients, but they had to be struck at daybreak because of the aeroplanes. For the lying cases we made large trenches, capable of holding stretchers.

When not in action, life was very quiet, with routine calls on all the aid posts, and an occasional "strafing" from the enemy. Prior to an action, we got up as far as possible in the dark, and dug in an advanced collecting post. Relays of stretcher-bearers worked forward and backwards from this to the carts of the bearer party. Artillery fire did not bother us much, as there was practically no high explosive, and most of the shrapnel burst too high to be of any great danger. But owing to the flat open country and the accurate shooting of the Turks, rifle fire was much more deadly than in France. We were always subjected to direct fire when out collecting, even when we used a Red Cross flag. This seems not to have been the experience of those in Gallipoli.

Our greatest trouble lay with the Arabs. They acted as free lances, though nominally siding with the Turk. During an action they hung on the out-

skirts of the fight waiting for night, to slip in and plunder and mutilate the wounded and dead. The latter had to be buried deep, and the graves smoothed over, so as to prevent disturbance from the jackals, human and otherwise.

There were not many sick during the first months of the year, owing to the continuous nature of the fighting. The wounds were very severe, and there was a higher proportion of abdominal and lower extremity ones than we were accustomed to in France. The accurate fire of the Turks kept the trajectory low, and many a man was killed by a second bullet through the head while he lay on the ground. The Arabs used bullets varying from slugs to the old Martini-Henry type. There was only one case of tetanus, and until this was reported the routine administration of serum was not adopted. Owing to the lack of roads the journey back to the river in our transport carts was not ideal. Frequently we sent fatigue parties to smooth down the water channels and construct paths. During March we had one big engagement, when the medical services were hard pressed, but emerged with great credit. It began with a fourteen mile night march, ending in an attack at dawn. During the day we had little to do, but the following night we were busy collecting. The surprise attack had failed, and the troops retired some distance, leaving us to search the desert in front of the Turks under fairly heavy fire. All the transport with three days' provisions for ourselves and the Kut Garrison, had advanced, expecting a victory. With true British optimism there were only water supplies for one day, and no arrangements for ambulance convoys, since we expected to take the cases forward to Kut. As there were over two thousand wounded, something had to be done, and all the stores were dumped and destroyed. By this time we had used up all our water, and the weary return of the convoy with the main part of our forces, under a hot sun, was a real *Via Dolorosa*. Some of us remained with the rearguard, and slowly retreated several hours later, under shell fire. We had neither water nor food, and yet the stretcher-bearers carried men for nearly twenty miles. This, on top of their previous work, was a magnificent feat of endurance, and surprised even those who knew what they could do.

Late in March, the floods came, and in common with all units we had to build dams to try and keep the water from flooding us out. Large tracts of country were under water, and in several actions we had to carry cases through water three feet deep for over a mile. The men suffered severely from swollen feet during this period. April saw some very heavy and practically continuous fighting, ending in the fall of Kut, while the troops were thoroughly exhausted after the fatigue of the operations. Our rations during this period were neither plentiful nor varied. Bully beef and biscuits were the usual items, with occasional fresh meat. Jam and sugar were scarce, and milk and butter unobtainable. In addition, we were frequently on

short rations, owing to the non-arrival, or deterioration of stores.

The Turks exchanged the worst cases in Kut for healthy prisoners, but they did not release those men who would recover in a reasonable time. No captured "medicos" were exchanged, for they were required to look after the remainder of the prisoners. The men who came back were extremely emaciated, and were sent direct to India. The weather was now getting hot, and the troops were holding a long line in the desert. Tents were erected for shelter, but life was very trying, and the general health well below "par." Cholera broke out and spread rapidly. The first case occurred in a British regiment, but natives and British alike soon were implicated. There were 500 cases with 280 deaths. The epidemic was very fatal at first, but gradually got milder. A collecting post was established, with special personnel and carts, while the cases were treated by Indian Medical Service officers in one ambulance. We suffered from a shortage of disinfectants, which seriously crippled our efforts to control the epidemic. While we had some cholera vaccine, there was not enough to test its prophylactic properties thoroughly. Enteric, dysentery and the paratyphoids were very common. The enteric was severe, and practically none of the troops had been inoculated against paratyphoid. This did not apply to fresh drafts from home. All drinking water came fourteen miles to us, in motor lorries, after having been chlorinated and treated with permanganate. Flies and mosquitoes were a dreadful pest, and nothing seemed to kill them until the weather became too hot even for them. The Turks evacuated a position, and our troops advanced five miles to occupy it. There were fourteen hundred cases of sunstroke and heat exhaustion. We had no ice and could only use the tepid Tigris water. While sweltering in the sun when the temperature was 120° in shade, one often wondered why a diet more suitable to the country than bully and biscuits had not been provided. Potatoes were stopped in May, as they would not carry in the heat, and we had onions only after then. The Y.M.C.A. brought up a store of tinned pineapples and limejuice, which we speedily cleared out. A more rational diet would have prevented the serious wastage from sickness, which occurred all summer.

While this was going on in the field, the ambulance headquarters were having a hard time. There was a mania for splitting up medical units and scattering them over wide areas. The headquarters sections, with only the equipment of one section, had to act as casualty clearing stations or stationary hospitals. There is no doubt that a proper stationary hospital should have been sent up from the advanced hospital base at Amara, 150 miles down stream. But probably the military situation, before Kut fell, did not warrant the change. Owing to the requirements of the force, all available men had

to stay in the front area. The hospitals were subject to raids from marauding Arabs, and were obliged to mount night guards to protect themselves. All patients who could hold a rifle had to take their turn at this. There was only one dentist at the front, and he had a busy time coping with the rush of cases. On several occasions the ambulances were bombed by hostile aeroplanes, and shelled by the artillery. We had large Red Crosses on the ground and on the tents, and on one occasion the enemy dropped an apology for bombing us. In fairness to him it must be admitted that frequently we were placed near a pontoon bridge or combatant stores. A most curious hospital ship—*The Ariel*—operated between the front line trenches and the hospital headquarters. It began life as a houseboat on the Irawaddy, and was brought by its patriotic owner to the Tigris. It was propelled by an aeroplane propeller stuck up in the stern. Its progress was marked by a series of loud explosions and whirring noises, and the Turk must have been puzzled at first. But to his credit he never fired on it.

The criticisms of the medical arrangements did not touch the field ambulances, except that we might have had better wheeled transport. The real trouble began at the river, and was due to the totally inadequate transport. At first there were no hospital ships. Whenever a boat unloaded its cargo it conveyed cases down stream with medical personnel to look after them. In many cases the unfortunate medical officer was not given sufficient equipment. Finally, a couple of hospital ships were constructed for cot cases, and other boats set aside for less serious cases. It was not unusual to wait seven to ten days for a convoy. This lack of rapid transport was responsible for a high mortality among the serious cases. The War Office took over complete control during last summer, and worked a transformation in all branches of the service. This is reflected in the brilliant series of operations culminating in the capture of Bagdad.

A none too creditable chapter of administration of a campaign is now closed. The pity is that it should have occurred. But one cannot help remarking on the magnificent endurance shown by the troops, both British and native. At one period they fought continuously for eighteen days through floods. The medical personnel was not a bit behind their comrades, who cordially recognized our efforts. We attempted to relieve our comrades in Kut against time and the weather, and a brave, resourceful enemy who outnumbered us. We failed after being within an ace of success, and it was not pleasant.

However, the tables are now turned, and from the letters I have received, the medical arrangements are very satisfactory.

Much must necessarily be left unsaid, as a commission is now sitting on the whole matter. But I hope I have been able to give you some idea of the conditions in that blessed land of Mesopotamia.

SOME NOTES ON FRACTURES AT THE ANKLE JOINT.¹

By H. R. Sear, M.B. (Sydney),

Honorary Assistant Radiographer, Royal Prince Alfred Hospital, Sydney.

For many years it has been customary to style the majority of fractures of the ankle joint as Pott's fractures, and to divide them into Pott's fractures with inversion, those with eversion, etc., and those with backward displacement.

These terms, inversion, eversion, etc., may suggest the nature of the causative strain or the result of this strain as regards the position of the foot, but they certainly do not convey any idea of the actual anatomical lesion that has occurred.

Now that medicine possesses an accurate method of detecting the exact injury, these fractures should be accurately grouped, and in describing them the exact nature of the break should be detailed.

In the past three or four years many of these fractures have come under my notice, at hospitals and in private practice. The following table gives the number of the various types of cases:—

Table I.
Table of Fractures.

Fracture of Fibula—	No. of Cases.
1. Tip of Malleolus	12
2. External Malleolus	25
3. Shaft	7
Fracture of Tibia—	
1. Tip of Malleolus (alone)	4
2. Tip of Malleolus with Fracture of Fibula	3
3. Internal Malleolus (alone)	4
4. Internal Malleolus with Fracture of Fibula	36
Vertical Plane Fractures (so-called "Lipping" Fractures)—	
A. Antero-Posterior Vertical Plane—	
5. Internal Vertical Plane	2
6. Mid Vertical Plane	1*
7. External Vertical Plane	1
B. Lateral Vertical Plane—	
8. Anterior Vertical Plane (alone)	—
9. Anterior Vertical Plane with Fracture of Fibula	2
10. Anterior Vertical Plane with Fracture of Fibula and of Internal Malleolus	—
Anterior Vertical Plane, as above, but with Fracture of Astragalus	2
11. Mid-Vertical Plane (alone)	—
12. Mid-Vertical Plane with Fracture of Fibula	4
13. Posterior Vertical Plane (alone)	3
14. Posterior Vertical Plane with Fracture of Fibula and of Internal Malleolus	23
15. Posterior Vertical Plane with Fracture of Internal Malleolus	2
16. Posterior Vertical Plane with Fracture of Fibula	1
17. Supra-Malleolar Fractures—	
(a) Shaft of Tibia (alone)	1
(b) Shaft of Tibia with that of Fibula	12
18. Separation of Epiphysis—	
(a) Fibula	1
(b) Tibia	—
(c) Tibia associated with Fracture of Fibula	1
19. Fracture along Epiphyseal Lines	1
20. Fracture along Epiphyseal Lines associated with "Lipping" Fracture	5
21. Comminuted Fracture	4
Total	156

¹ Read at a Meeting of the New South Wales Branch of the British Medical Association on May 11, 1917.

* It was associated with a fracture of the fibula.

The number is much smaller than was anticipated from the collection of plates, many results of the plates being negative for fracture, and in many instances several radiograms were taken of the same case. The figures are those of the actual cases.

As will be seen, a large number have been described as vertical plane fractures, a term that explains itself, and of which diagrams are shown.

These can be divided into two main groups: antero-posterior and lateral. Each of these again is divided into three sub-groups, according to the part of the tibia implicated.

One class is exceedingly common, although it has not been recognized until recent years. This sub-group is now described in treatises on fractures. The first description of it was, as far as I know, given by myself in the case of the late Dr. Jekyll in 1911 at the Royal Prince Alfred Hospital.

Meissner's, Speed's and Colvin's series are appended.

Table II.
Meissner's Cases.

	No. of Cases.
1. Fracture of the External Malleolus, or of the Fibula above the Joint	51
2. Fracture of the Internal Malleolus	7
3. Fracture of both Malleoli	100
4. Fracture of Supra-Malleolar Region	39
5. Fracture with Epiphyseal Separation	11
6. Fracture of Tibial Articular Surface	3
Total	211

Table III.
Enumeration of Skiographic Study of the Ankle Fractures (Kellogg Speed).

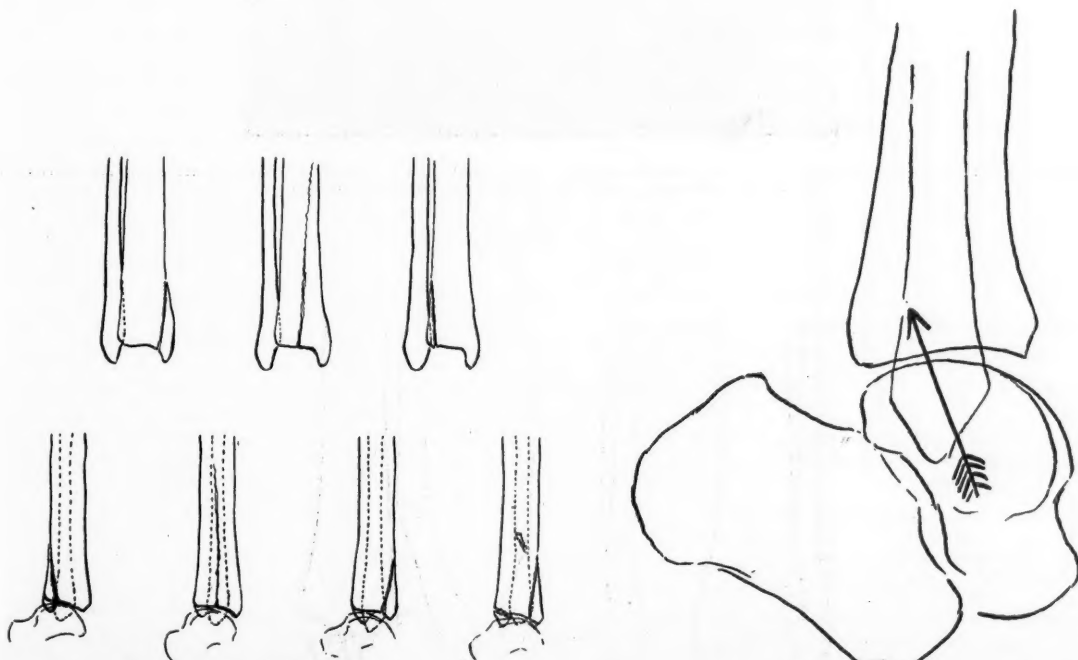
	No. of Cases.
External Malleolus alone	60
External Malleolus with Fracture Internal Lateral Ligament, as evidenced in skiagram	31
Internal Malleolus alone	10
Both Malleoli	47
Appreciable Separation of Interosseous Ligaments	10
Both Bones Fractured above Epiphysis	12
Fracture of External Malleolus and Epiphyseal Separation	1
Lipping Fracture	16

Table IV.
A. R. Colvin's Cases.

	No. of Cases.
1. Fracture of the External Malleolus, or of the Fibula above the Joint	16
2. Fracture of the Internal Malleolus alone	4
3. Fracture of both Malleoli	27
4. Fracture of Internal Malleolus, and of the Fibula above the Joint, combined with Backward Dislocation of the Foot	3
5. Fracture of the Internal Malleolus, and a Splitting Off of a considerable triangle of bone from the Tibia at the Tibio-fibular junction	1
6. Split Fracture of the Tibia at the Tibio-fibular junction, of minor degree, with no separation (no other fracture)	1
7. Comminution of the Articular Surface of the Tibia	1
8. Supra-Malleolar Fracture	6
9. Fracture of the Fibula and Rupture of the Internal Lateral Ligament	1

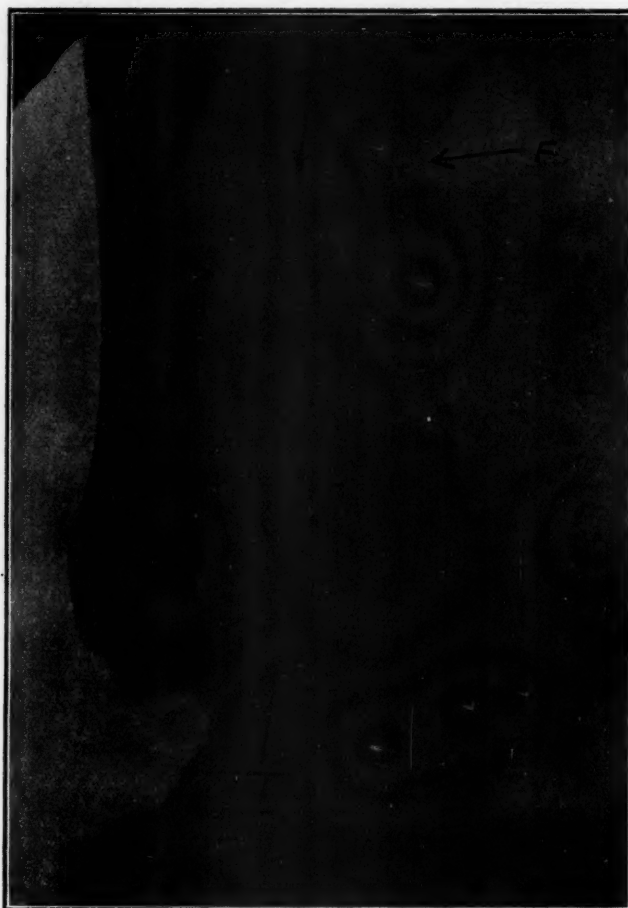


Posterior Lipping Fracture, with Fracture of the Fibula and of the Tip of the Internal Malleolus.

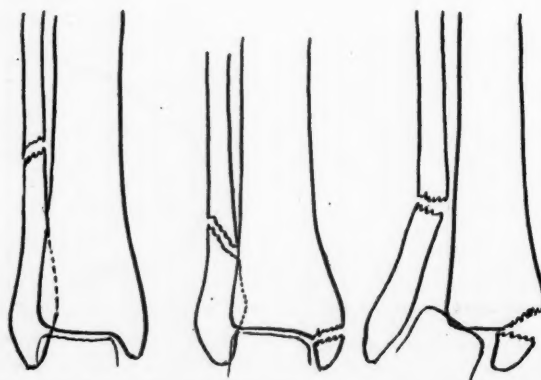


Vertical Plane or Lipping Fractures.
Upper: In Antero-posterior Plane.
Lower: In Lateral Plane.

Illustrating How Full Extension Throws the Main Strain on the Posterior Portion of the Lower Articular Surface of the Tibia.



Posterior Lipping Fracture (involving a large part of the Articular Surface of the Tibia), with a Comminuted Fracture of the Fibula and Fracture of the Internal Malleolus. (Note the posterior displacement of the foot.)



True "Pott's."

Commonest so-called "Pott's."

Dupuytren's.

Anatomy.

Briefly, the anatomy of the joint is that of a hinge joint, the most noticeable feature of the joint under discussion being that it is much more stable in flexion than in extension, owing to the upper articular surface of the astragalus being broader at its anterior than at its posterior aspect. This is important, in view of the author's ideas as to causation of certain fractures.

In considering the resultant displacements, muscular forces enter very little into consideration, as it is only in the posterior displacements that they come markedly into action.

Mechanism.

The mechanism of a Pott's fracture is usually described as follows:—

In severe abduction the outward force either ruptures the internal lateral ligament or tears off the internal malleolus. The astragalus is driven against the inner surface of the external malleolus and the fibula gives way at its weakest spot. This does not explain the reason for the "lipping" fracture. Probably in these cases a vertical strain comes into action. With or without eversion or inversion this vertical strain is one of indirect violence, and, according to the position of the astragalus in relation to the articular surface of the tibia, so we get the various types of fracture. If in full extension, the strain is thrown on the posterior part of the articular surface of the tibia (see diagram), and we get the lateral vertical plane fracture of the posterior lip.

A careful history has been taken in these cases, and such a strain can usually be elicited, e.g.:—

B. was walking down stairs. The main part of his foot missed the stair, the heel caught, and the patient landed on the next step on the ball of the toes with the foot in full extension.

H. missed the step and landed on the ball of his toes with his foot in extension.

J. was bending to pick up a football with one leg extended; the man tackling him landed heavily on his back and a posterior lip fracture occurred of the extended foot.

The main reason why such fractures are associated with those of the fibula becomes at once apparent. In full extension the posterior part of the articular surface of the astragalus, much the narrowest part, comes in contact with the lower tibial articular surface; the joint is, therefore, at its weakest point as regards stability and the vertical strain may easily be associated with a lateral one as well. If the foot is fully flexed the strain comes on the anterior lip of the articular surface of the tibia, which gives way.

A vertical fracture up from the shaft is rare. The history elicited in one case in 1915 was that of a fall flat on the feet from a height of a few feet.

Coming now to the various types of fractures, a few will be briefly touched upon.

Fractures of the fibula alone occurred in 39 cases (28%). Usually they were caused by indirect violence,

a considerable percentage (7.2) being of the so-called sprain-fracture type. These fractures were almost always associated with eversion, but not invariably so, as it is possible to have "Pott's with inversion," the sole bony lesion of which is a fracture of the external malleolus. The greater percentage of cases showed the fibula to be fractured through the malleolus. Fractures higher up—the true Pott's (of his book in 1769)—formed only 15% of these cases, and only 4.3% of the total series. Colvin, of St. Paul, in his series of 60 cases, found only one true Pott's fracture. Kellogg Speed, in his series of 208 cases, also notes their relative infrequency.

Fractures of the tibia, apart from the vertical plane fractures, are not common without fracture of the fibula. Cheyne and Burghard state that:—

Fracture in this region is extremely rare, and need not be referred to at length. Sometimes the internal malleolus is broken off by direct violence, such as a kick, without any fracture of the shaft.

Exception must be taken to the above statement, not only as regards frequency, but also as to the nature of the accident by which such fracture has occurred.

These fractures do occur as a result of indirect violence, forming 5.7% of these cases; more than half were of the nature of a sprain fracture, only the tip being detached.

Fracture of the tibia associated with fracture of the fibula form the commonest type of the so-called Pott's fracture, and may be associated with inversion or eversion. Nothing further need be said about this type, except that they formed only 23% of the series.

The so-called "lipping" fractures, which I have termed "vertical plane fractures," are much more common than was thought a few years back. On referring to Rose and Carless we see that they indicate that the lines of fracture in fractures with backward displacement of the foot are the same as these with the usual fracture with eversion; but this variety of fracture is not mentioned by them. There is no doubt that it is the cause of much of the backward displacement.

Four cases were reported in 1914 by Quénu, and by that time Plagemann had found but two.

Kellogg Speed, in his series of 208 cases, found 16, all posterior.

Of the vertical plane fractures, that of the posterior lip of the tibia is the commonest, and is very frequent, forming 15% of this series.

It is in the greater percentage of cases associated with fracture of the fibula, which may account for the grouping of it by Roberts and Kelly with fractures with eversion and abduction.

Roberts and Kelly state that: "The injury is no doubt a variation of the typical fracture of the external malleolus regions. It consists of a supra-malleolar fracture of the fibula, usually about one and a half to two inches above the lip of the malleolus."

olus, with fracture of the tibial malleolus and the posterior articular surface of the tibia."

Still this is not invariable. In five cases representing 23.8% of these cases the fibula was not fractured, and of these five cases the lipping or posterior vertical fracture was the only fracture in three, in the remaining two cases the fracture being associated with that of internal malleolus. Again let me say that not only is this fracture usually associated with that of the fibula, but also with that of the internal malleolus as well.

The other lipping fractures are exceedingly rare, and will not be discussed.

Fractures of the shaft of the tibia immediately above the ankle (within $1\frac{1}{2}$ inches in adults) are uncommon, and are almost invariably, but not always, associated with fracture of the fibula.

Epiphyseal separations at the ankle are exceedingly rare. This is noticed especially at the Children's Hospital.

Fractures along the epiphyseal lines in adolescents are often associated with some lipping or vertical plane fracture.

In conclusion, I should like to note the rarity of that fracture with which students are so often worried, *viz.*, Dupuytren's. No such case has come under my notice during the last four years.

Reports of Cases.

CANCER OF THE CERVIX UTERI FOLLOWING SUB-TOTAL HYSTERECTOMY.¹

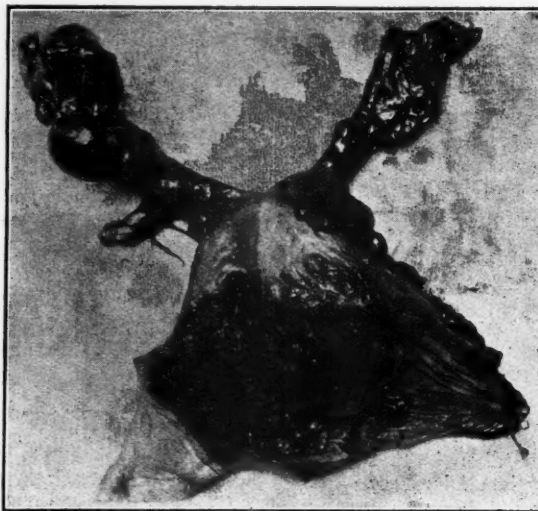
By Ralph Worrall, M.D., M.Ch.,
Gynaecologist to the Sydney Hospital.

History.—G.M., *act.* 43 years, a II-para, was admitted to the Sydney Hospital on February 27 of this year, complaining of hæmorrhage and disagreeable discharge. Sub-total hysterectomy for bleeding fibroids had been performed in another hospital three years previously. Some discharge had continued since. This had greatly increased and become more hæmorrhagic for the past seven months.

Condition.—The patient was very stout. Pelvic examination showed that the uterus had been amputated and that the cervix, which had evidently been lacerated and hyperplastic, was the seat of a papillary form of squamous-celled epithelioma, invading the parametrium and vagina on the right.

On March 1 Wertheim's radical operation was performed. Great difficulties were encountered, owing to the pelvis be-

ing shut in by dense adhesions between the pelvic colon, the stump of the cervix and the bladder; the usual lines of cleavage were undefinable, and consequently the isolation of the ureters proved more arduous than usual. There were no enlarged glands. Both ovaries and nearly half the vagina, as you see, have been removed with the cervix and parametria. After careful "peritonization" of the large, raw surfaces, a gauze drain was passed from pelvis to open vagina, but the subperitoneal spaces were not drained. The operation, including five layers of suturing in the parietal wound, occupied one hour and forty-five minutes. There was moderate shock, which passed off in three hours. Convalescence was favourable. The highest temperature was 100.2°, and the highest pulse-rate 124. There was no vomiting or abdominal distension. The pelvic drain was removed on the seventh day.



This case conveys a lesson to which attention should be drawn. I have seen two other similar cases in my own practice, and during my visit a few years ago to various clinics I heard of quite a number of others. The first case which came under my notice made so great an impression that I adopted the plan of repairing the lacerated cervix, when such existed, in conjunction with a myoma prior to performing subtotal hysterectomy for the latter condition. I came to see that this was a tinkering method of dealing with the trouble, and went on to total hysterectomy by the vagino-abdominal method. This was a successful procedure, and gave me a series of 84 consecutive recoveries before a death occurred; it was attended, however, by more delay and loss of blood

than was good for patients, who were often already weak and ensanguined, and I therefore relinquished it for total hysterectomy by the abdominal method. The technique of this operation I have improved so that the operation does not occupy more than thirty to thirty-five minutes in an uncomplicated case, and does not involve more hæmorrhage than subtotal hysterectomy. Assured on these important points, I now perform total hysterectomy—when such an operation is indicated—in all cases associated with a diseased or injured cervix.

In order to show the change in my practice, I might mention that in 1906 I performed twenty subtotal hysterectomies, no total hysterectomy, and ten vaginal hysterectomies, while in 1916 I performed nineteen subtotal, fifty total and no vaginal hysterectomies.

Judging by the number of cases I have seen of discharge, and in some cases even hæmorrhage, after "hysterectomy," I am inclined to think the practice in Sydney by many surgeons is to do a subtotal hysterectomy regardless of the condition of the cervix. Not a single text-book that I know of contains a note of warning on the subject, so probably the same practice prevails elsewhere. The time has come, I think, when the subject should be reconsidered.

We regret to note that owing to its inability to secure the services of a Medical Superintendent the Sydney Medical Mission has been forced to close its doors temporarily. We have had occasion in the past to refer to the excellent work of this organization, the foundation of which was largely due to the energy and sympathetic activity of the late Dr. Julia Carlile Fox.

¹ Read at a Meeting of the New South Wales Branch of the British Medical Association on May 11, 1917.

The Medical Journal of Australia.

SATURDAY, JUNE 23, 1917.

Enrolment for Enlistment.

The members of the medical profession are being asked whether they favour special legislation providing for enlistment of doctors for service at home and abroad. From various sources we learn that some uncertainty exists concerning the effect of the introduction of legislation of this kind. It has been stated that medical practitioners will not vote in favour of the proposal unless certain guarantees are forthcoming. In the present issue Dr. Archie Aspinall narrows the issues down to practical limits, and it may be of some assistance to our readers if an attempt be made to analyse the position.

For the purpose of simplifying the discussion, it is advisable to apply ourselves to the reply to Dr. Aspinall's second and third questions first. He seeks information concerning the system of calling up men for active service and the composition of the Board of Control. Reference to the memorandum of the Director-General of Medical Services, which was issued on October 2, 1916, after the proclamation and in anticipation of an affirmative reply to the question then referred to the people, will illuminate the views of the authorities in connexion with the best means of utilizing the services of the medical profession under a system of compulsory conscription for active service abroad. It was then contemplated to follow the precept of the authorities in Great Britain and to require a preliminary enrolment of medical practitioners who would be liable for service. This means that every practitioner would be asked to enrol himself or to seek exemption from service. The valid reasons for exemption would presumably be advancing age, ill-health or other physical disabilities and under well-defined conditions obligations to carry out duties of national importance. The alternative referred to in the Memorandum of October 2, 1916, was conscription as a private in the combatant forces. Under the altered

circumstances of compulsory enlistment of the medical profession alone, we may assume that the practitioner who refrained from enrolling voluntarily, would be called upon to go overseas, without much consideration being given to his domestic obligations. Let us then suppose that those who could not serve, applied for and obtained exemption, and that the remainder were enrolled in the special register. These men would fall into two groups; those under 45 years of age and those between 45 and 60 years of age. Of the latter, only those who possessed special qualifications or who appeared to be exceptionally suited for special service, would be selected for service abroad. It seems to us that the idea underlying the memorandum, which would no doubt hold good in the event of a special Act of Parliament for the medical profession being introduced, in regard to the system of selection, would be somewhat as follows: The District Medical Committee or some analogous body would collect all the information available concerning the individual practitioners in the district over which it had authority. From this information it would determine which men could be required to go overseas without undue hardship, and which men should not be asked, save under circumstances of desperation. The age of the men, whether they were married or single, the number of their dependents, whether they were prosperous or living up their incomes, whether their physical condition was good, bad or indifferent, whether their professional attainments were average or exceptional and whether the district in which they practised was well or scantily supplied with medical practitioners would be matters which would weigh with the Committee in making a preliminary selection of the practitioners in its area for enlistment. Enrolment would not place the men under the control of the military authority, while enlistment would. The Committee would advise the Principal Medical Officer of the Military District in regard to those selected for duty locally, those selected for duty in military camps and hospitals within the Commonwealth, and those selected for duty overseas. It may further be assumed that the advice of the Committee would be sought in regard to members of the Reserve. It is inconceivable that the legislature would countenance a compulsory enlistment unless some

scheme were devised to ensure a wise selection of those whose services would be required. It is equally inconceivable that the scheme evolved by the Director-General of Medical Services for the same contingency would not be the one selected. We therefore claim that the machinery outlined would be that adopted in the event of compulsory enlistment being granted to the medical profession. In regard to the composition of the District Medical Committees, we do not hesitate to suggest that that proposed in October of last year, or something very similar, would be chosen. The District Medical Committees consisted of the Principal Medical Officer, two representatives of the Branch of the British Medical Association, one representative of the University in districts where there is a medical school in connexion with the University and two representatives of the medical profession, nominated by the Commandant, and approved by the Military Board.

Dr. Aspinall's first question deals with the method to be adopted of financing men on active service. We have already pointed out that the District Medical Committee would endeavour to select only those men for service abroad whose financial position would be equal to the strain. The remuneration of a Captain is small, and the financial loss associated with service has in many instances been severe and almost ruinous. In the case of young men, whose positions are not yet established, there would be no need for special arrangements. For married men with or without families the problem is different. If these men could be released after a relatively short term, the majority would be able to weather the storm. A proposition is at present on foot to assist men going overseas on active service to take out a life insurance policy, in order that their dependents might receive some monetary assistance in the sad event of them falling for their country. No further financial aid could be provided, and we doubt whether any medical practitioner would desire any.

The last point concerns the relief of those who have been on active service for close on three years. One of the objects which induced the Federal Committee to refer the question to the members of the medical profession, was to find a means of bringing relief to these men. While the military authorities

find difficulty in covering their bare needs, what chance is there of relieving those serving on the other side? Given a plentiful supply, nothing could be easier than to arrange for a series of exchanges. The longer the war lasts, the more imperative will this need become, and we are persuaded that the solution of the difficulty will not be found until the whole resources of the medical profession are rendered available. It has been proved beyond doubt that under the voluntary system the military authorities cannot effect these exchanges.

SIZE OF BRAIN AND INTELLIGENCE.

In this issue we publish a communication by Professor R. J. A. Berry on the correlation between the increase in size of the brain during the growing period and the development of intelligence. The subject is fraught with many difficulties, and is complicated by numerous known, and probably innumerable unknown, factors. Professor Berry has attacked the problem with courage and faith, and has displayed great skill and ingenuity in propounding a thesis and in marshalling his facts. Even those who will not accept the suggestions which he has insinuated in this interesting piece of research, will be fascinated by the presentation and will admit that he and his co-workers have introduced a study of importance to the community. In its essence the thesis which Professor Berry has set up, not as a completed piece of work, but as a problem worthy of further investigation which may prove to be reliable, is that the increase in mass of the brain can be measured by means of measurements of the outside of the skull in the living subject and that this increase corresponds more or less closely to an awakening of intellectual powers or the development of intelligence. The first point on which evidence is required is the correspondence of the calculated mass of brain to the actual mass. The formula of Miss Lee has been used in his experiments. Dr. Anderson has compared the estimated cranial capacity with the actual mass of brain after death, and while the average results correspond fairly closely, the extreme values differ very markedly. From the table published it will be seen that the error may be as high as 43%. In other

words the actual brain mass may be 16.5% greater or 26.5% smaller than the estimated mass in any given case. This is scarcely surprising, since the measurements carried out in the estimation are those of the external configuration of the skull, and the information sought refers to an organ which is always well protected, but which is better protected in some individuals than in others. In the next place, he endeavours to correlate estimated increases in size of the cranial cavity with estimated increase in intelligence. This assumes that an increase in the size of the brain is mainly to be attributed to those portions of the cerebrum and cerebellum which are the seat of intellectual faculties. We recognize the brain as the organ controlling motion, sensation, and many vital functions, as well as the functions of memory, speech, hearing, sight, taste and smell, thought, and emotions. How many other functions are localized in the brain we do not know. The functions of the special senses are no doubt utilized in the intellectual processes, but they exist in many of the lower animals without the exercise of logical thought. If we assume that intelligence means the voluntary co-ordination of impressions in various cerebral centres through the agency of association fibres, and that its development depends on the formation of these association fibres, we are also bound to assume that association fibres exist independently of thought, memory and other intellectual faculties. The increase of brain mass in the growing individual, according to Professor Berry, is made up of the growth of collateral fibres and neuroglia. The neurones increase in size in the lower animals for purposes wholly unconnected with the higher intellectual processes, and it is not unreasonable to assume that the same increase takes place in growing human brains for purposes other than the intelligence. We would therefore expect that, if it be accepted that the intelligence is represented by mass in the brain, the increase in intelligence would represent but a minimal proportion of the increase of mass of the whole brain. We must, however, admit that these arguments are based on assumptions, many of which we are not prepared to admit or to deny, in the absence of direct evi-

dence. Nevertheless, if the premises on which Professor Berry explains his observations be correct, his argument should fail because he has neglected to allow for a corresponding increase in size of the brain in connexion with its functions other than intellectual. In order that this deduction can be disproved, it is necessary to produce experimental evidence of an unmistakable correlation between the brain mass measurement, and intelligence. Up to the present Karl Pearson, who has accepted doubtful estimates of intellectuality, evaluates the correlation at 0.1, while with the accurate classification adopted by Professor Berry and Mr. Porteus, it would appear to be somewhere about 0.4. This means that in two series of observation coincidence occurred four times and was absent six times in each ten estimations. The estimation of intelligence on the basis of outside head measurements therefore fails more frequently than it succeeds. It is, of course, possible that when the classification can be made according to the mental quality of the individual rather than of the class the correlation may be considerably higher, but even in the small series in which this has been carried out, there were many exceptions to the alleged rule that increase in the size of the head is an index of educability. We wish to congratulate Professor Berry and his co-workers on their ingenious research, notwithstanding this criticism, and to advocate with them the establishment of a national laboratory, where these important problems may be followed out for the good of the race.

DOCTORS WANTED FOR ACTIVE SERVICE.

The Military Authority has requested us to announce that thirteen medical practitioners are being sought at once for service with the Australian Imperial Force. As these men will not be required for field service, but will be attached to hospital units, experience in hospital is essential. They will be required to leave the Commonwealth in one month's time. These men are in addition to the younger men required for field service.

We regret to record the death of Dr. Henry Benjafield, of Moonah, Tasmania, which took place on June 13, 1917.

Abstracts from Current Medical Literature.

THERAPEUTICS.

(191) Serum Treatment in Epidemic Poliomyelitis.

H. L. Amoss and A. M. Chesney report the methods used and the results attained in 26 cases of acute poliomyelitis treated with human serum from recovered and convalescent patients (*Journ. Exper. Medicine*, April, 1917). The authors point out that meningitis, accompanied by pleocytosis, precedes the onset of paralysis. The use of the microscope and of chemical methods at the bedside aids in early diagnosis. Serum may be injected intraspinally to reach the subarachnoid space and the perilymphatic tissues. It can also be given through the blood, either directly or indirectly. The serum employed in most of the cases was obtained from patients who were still paralysed but had been convalescent for eight weeks or less. In two instances the donors had passed through the disease two years previously. The patients treated may be considered in a number of groups. In the first group are included three persons who had an extending paralysis at the time of treatment. A man, aged 33 years, ill 72 hours with ascending paralysis of the legs, of the bladder and of the abdominal and thoracic muscles, received 10 c.cm. serum intraspinally and 20 c.cm. intravenously. He died ten hours later. A girl, aged 10 years, ill 96 hours with ascending paralysis of the legs, of the bladder, of the abdominal wall, of the right deltoid muscle and of the right facial muscles, received 20 c.cm. serum intraspinally and 60 c.cm. subcutaneously. The temperature reached normal in 24 hours and the respiratory muscles became more active. The bladder function was restored in four days. The paralysis did not extend further. A boy, aged 3 years, ill 72 hours with paralysis of the right facial muscles and with loss of deglutition, received 15 c.cm. serum intraspinally, 20 c.cm. intravenously and 40 c.cm. subcutaneously. The temperature fell from 40° C. to normal in 18 hours. The paralysis progressed no further. Marked improvement in the paralysis was noted during convalescence. In the second group of cases are included those patients who exhibited some paralysis, but who were treated so early that no extension of the paralysis had been observed. Eight children under four years of age and one woman aged 33 years, constitute this series. The woman, ill 54 hours with weakness of the legs and of the abdominal muscles, received 20 c.cm. serum intraspinally and 50 c.cm. intravenously. The temperature fell from 39.4° C. to normal in 60 hours. There was no extension of the paralysis. In the children the condition progressed

slightly, did not alter or improve. In the third group there was no paralysis when the treatment was begun. Three patients received small quantities, i.e., less than 30 c.cm., of serum. In a boy, aged 8 years, treated after 48 hours' illness, paralysis appeared in the arms, in the legs and in the abdominal muscles. Two children, aged 19 months and 4 years, died 66 hours and 28 hours after the commencement of treatment. Another child, aged 8 years, received 30 c.cm. serum. Paralysis appeared in both arms. In the remaining ten patients more than 30 c.cm. serum was given. In these persons recovery occurred without the onset of paralysis. Tables are given which show (1) that no patient who received more than 35 c.cm. serum, suffered any extension of the paralysis except one patient, who received 55 c.cm. 72 hours after the onset of the disease, and (2) that the number of hours that have passed after the onset before the use of serum, determines the benefit produced by the serum. Charts are given showing the fall of temperature in some of the cases. In regard to the method of administration the authors tested every serum by the Wassermann test. They also made certain that no bacteria and blood corpuscles were present. Any serum discoloured by hæmoglobin, was rejected. The sera were injected by the gravity method under low pressure. A quantity of spinal fluid greater than that of the serum to be introduced was removed before injecting the serum intraspinally.

(192) The Excretion of Salicylates.

P. J. Hanzlik, R. W. Scott and T. W. Thorburn have estimated the amount of salicylic acid appearing in the urine of patients suffering from rheumatic fever (*Journ. Pharm. and Exper. Therapeutics*, February, 1917). They have compared these quantities with those secreted by normal persons under the same conditions. In addition they have made some measurements of the excretion of salicylic acid in persons suffering from diseases other than rheumatic fever. The subjects of these experiments received hourly doses of 2 gm. sodium salicylate dissolved in 100 c.cm. water until signs of toxicity were manifested. Thereafter they took 200 c.cm. water every two hours until the excretion of salicylic acid through the kidney ceased. About 13 gm. sodium salicylate was required to produce "toxic" symptoms. The urine was collected for periods of 10 hours, and the salicylic acid present was estimated by a colourimetric method after distillation. The excretion of salicylic acid was observed to endure for 80 to 110 hours. Observations were made on the temperature, pulse-rate, blood pressure, etc., of the subjects and estimations of many constituents of the urine were carried out. The present paper deals only with the excretion of salicylic acid. For comparison the average figures of the results obtained with six normal persons, eight rheumatic patients and seven people suffer-

ing from varied conditions are employed. The total excretion of salicylic acid was 15% less in rheumatic than in normal individuals. About 75% of the amount of salicylic acid ingested appeared in the urine of the normal persons and about 60% in the urine of the rheumatic individuals. A study of the quantity of salicylic acid excreted by the two classes of persons during the different stages of excretion showed that the excretion in normal persons was greater in the first twenty hours than in rheumatic subjects. The authors had previously shown that the concentration of salicylic acid in the blood at "toxicity" was less in rheumatic than in normal persons. They find the concentration of salicylic acid in the urine, too, shows a similar change in concentration, which is not due to any difference in the quantity of urine secreted by healthy or rheumatic persons. No evidence of any retention of salicylic acid could be obtained to explain why it did not appear in the urine. Careful examinations of the faeces and of the sweat showed that little salicylic acid was lost by these channels. The authors believe salicylic acid is oxidized and destroyed in the body. They note that secretion appears at a normal rate when rheumatic patients are no longer feverish. They conclude that the destruction of salicylic acid occurs at a more rapid rate in the febrile rheumatic subject than in the normal individual. The authors have made some observation on the effects of administering sodium bicarbonate along with sodium salicylate. They have been unable to detect any influence on the rate of excretion of the drug or upon the amount that induced "toxicity" in the patient. Observations on patients suffering from chronic alcoholism and morphinism, and on those with diminished renal efficiency, demonstrated a lessened excretion of salicylic acid in these persons. The rate of excretion in these persons was similar to that seen in rheumatic patients.

(193) Effect of Thyroid Feeding on the Pancreas.

M. Kolima has described the effects produced by feeding animals with thyroid extracts, on the microscopical features or sections of the pancreas (*Proc. Roy. Soc., Edinburgh*, January, 1917). After the administration of 1 gm. daily of the extract from the thyroid of the ox to rats for three days, division and multiplication of the cells of the alveoli of the pancreas is so pronounced that 8 or 10 mitotic figures can be seen in every field beneath the microscope. The cells become more numerous but smaller in size. After feeding for 10 days the mitotic figures observed are less numerous, while the gland regains its normal appearance in about three weeks. Another morphogenetic effect of feeding with thyroid extract is seen in the diminution of the zymogen granules within the cells of the pancreas. Normally these fill the greater part of the inner zone of

the cells. After a few days' feeding with thyroid extract the relative amount of the zymogen granules is much lessened. This diminution lasts for about three weeks. No changes were observed in the islets of Langerhans.

UROLOGY.

(194) Cancer of the Prostate.

G. MacGowan (*Journ. Americ. Med. Assoc.*, February 17, 1917) deals with the clinical aspect of malignant disease of the prostate, including the differential diagnosis. In chronic parenchymatous prostatitis the gland is usually increased in size symmetrically, and the capsule distended. At times, however, the inflammatory process may be limited to one portion of the gland, or may be scattered irregularly throughout the whole gland. It is tender on pressure and often very hard. Massage tends to reduce its consistence and volume, and expresses a *succus prostaticus* containing pus, phosphatic débris, lecithin granules, bacteria, epithelial cells, and at times dead spermatozoa. Simple hypertrophy of the adenoid or fibro-muscular tissue of the prostate gives rise to a large tumour which is freely movable. When the adenomatous elements preponderate, the tumour has a certain amount of elasticity, while in fibro-muscular enlargement there is induration, but this is not as marked as in malignant disease. The tumour is not adherent to the surrounding tissues. A chronic abscess may produce a tumour of stony hardness, and the differentiation from cancer can only be made by the discovery of pus. Prostatic calculi can be detected by means of radiograms. Prostatic atrophy may simulate cancer closely, and at times the diagnosis cannot be made until a portion of the tissue is removed for microscopical examination. In tuberculosis of the prostate the disease is nearly always secondary to tuberculosis of the epididymis. Sarcoma of the prostate is usually somewhat elastic and little painful. It occurs in youths, and only rarely in men past 50 years of age. Within recent years it has been discovered that carcinoma of the prostate is comparatively frequent. Various observers have found that it was present in from 15% to 28% of prostates removed by operation. The author has found extensive carcinomatous infiltration without any characteristic symptoms. Retention of urine and vesical irritation exist in practically all affections of the prostate. There are no changes in the urine peculiar to cancer. When retention supervenes on vesical irritation in months instead of years, when there is bullet-like induration without symptoms of syphilis or tuberculosis, when the capsule is adherent to the fasciæ and the gland is no longer movable, and when the central groove is blurred or lost, it is safe to make the diagnosis of cancer of the prostate. Rigidity of the

walls of the posterior urethra may lead to an intolerance of a catheter. Hæmaturia may or may not be present. In all cases in which cancer is suspected an examination by the urethroscope should be carried out. Œdema of the surrounding tissues, especially when accompanied by pain and vesical irritability, should lead to the careful examination for malignant disease. The author appends a general account of eight cases dealt by him with operation, and illustrates the points for diagnosis in each case.

(195) Drainage in Renal Infections.

J. R. Caulk advocates the proper use of the ureteral catheter as a conservative but efficient means of treating renal infections, more especially in infected hydronephrosis complicating pregnancy (*Journ. Amer. Med. Assoc.*, March 3, 1917). He insists that the passage of the ureteral catheter is a simple matter, unattended with real pain. The ureteral catheter is required as a means to establish drainage in certain cases of renal retention. Three grades of retention are recognized. In the first the amount of retention is small, the contents of the renal pelvis are under great pressure, the muscle fibres of the renal pelvis are under tension, but have not lost their tone, and after relief is accorded the renal function is little, if at all, disturbed. In the second grade there is pronounced dilatation of the pelvis, the muscle fibres are weakened, but will recover if the strain be relieved. The renal function is distinctly impaired. In the third grade, the fibres cannot regain their tone, and the renal function is partly or wholly destroyed. The author claims that in the first class the prospects of cure are excellent. One or two catheterizations usually suffice. At first cloudy urine escapes; as the sediment is reached, the cloudiness increases, but within a short time there is a normal intermittent secretion of clear urine. In the second class, caution must be exercised in estimating the amount of renal disturbance. The patient is often very ill, has marked fever, rigors, and renal tenderness. A tumour is often palpated. The urine contains pus and bacteria, and a plug of thick inspissated pus is seen issuing from the corresponding ureter. When the plug is removed and the catheter passed into the kidney, pale, milky urine is obtained. The organ may be practically deprived of its function. On draining the kidney for a time, the function may return almost to a normal extent. On the other hand, if the pathological process has led to irreparable damage to the kidney, drainage is of no avail, and the only rational treatment is removal of the organ, if its fellow is functioning. The ureteral catheter is retained as a rule for three days, and daily instillations of small amounts of argyrol or silver nitrate are given. The author records his experience in overcoming the retention in the hydronephrosis met with in pregnant women. Unless the dis-

tension of the renal pelvis has been excessive, very satisfactory results are obtained in these cases, notwithstanding the severe symptoms. In many instances drainage sufficed to remove all the symptoms, and the parturition was completed without trouble.

(196) Preliminary Treatment to Prostatectomy.

H. H. Young and W. A. Frontz point out that the mortality of the operation of prostatectomy has been reduced from 20% to 4% in the course of 20 years (*Journ. Americ. Med. Assoc.*, February 17, 1917). They consider that more accurate diagnosis and better operative technique have contributed largely to this improvement. They find, however, that the prevention of complications has effected a still more remarkable change. For some time pre-operative drainage applied suprapubically was found to improve the patient's chances very materially. Later it was discovered that the same results could be obtained by means of a catheter. The result of systematic preparatory treatment has been eminently satisfactory since, in 1908, they were able to report on 128 consecutive cases without a death, two of the patients having been over 80 years of age. The risks attending the operation of prostatectomy are derived from renal impairment, cardiac affections, high arterial tension and infection. For renal impairment relief of urinary retention by means of regular catheterization, diuresis, urinary antiseptics and the treatment of acidosis are needed before operation. The determination of the degree of renal impairment is carried out by means of the phenolphthalein test, the determination of the urea contents of the blood and the estimation of the hydrogen ion concentration of the blood, as indicating acidosis. Cases are quoted to show the value of this preliminary treatment. For cardiac affections, rest in bed, digitalis and, if necessary, a limitation of the fluid, together with free catharsis, may diminish the operative risk very markedly. When cardio-renal disease is present, a carefully planned course of treatment adapted to the condition of the heart and kidney is necessary. High blood pressure may be combated by rest in bed, and drainage to remove the back pressure symptoms. A urinary infection is very common in persons requiring prostatectomy. Local treatment, including frequent change of catheter, injections of argyrol and irrigations, usually overcome the infection sufficiently to justify the operation. The authors record a series of 94 cases in which prostatectomy was carried out 90 times by the perineal route, and four times by the suprapubic route. One patient, aged 93, died 13 days after the operation of cerebral thrombosis. Preliminary treatment was required 53 times, and extended over a period varying from less than one week to 60 days. They claim that under these conditions perineal prostatectomy may be regarded as a benign operation.

the expression "quality of brain" meant anything at all, it denoted an activity of nerve cells due to some subtle and as yet unmeasured and unmeasurable chemical or physical reaction. He did not deny the possibility of brain quality entering into the problem, but he could find no proof of it. The facts appeared to point to an association between size of brain and mentality, and he knew of no evidence capable of scientific investigation which pointed to quality of brain rather than quantity as forming the dominant factor in the mentality of individuals.

In the next place Professor Berry exhibited tables to illustrate that the correlation between size of head and intelligence held good for classes.

	Cubic Capacity.	Per cent.
355 Melbourne Criminals.. ..	1,438	100
British Association	1,495	103.9
14 Melbourne Medical Students..	1,505	104.6
215 London Medical Students ..	1,507	104.7
59 British University Teachers ..	1,521	105.7

These general results were supported by Matiegka, who had based his measurements on the actual weight of brains. In his table the average weight of the brain of day labourers of the navy class was the lowest, then came that of work-

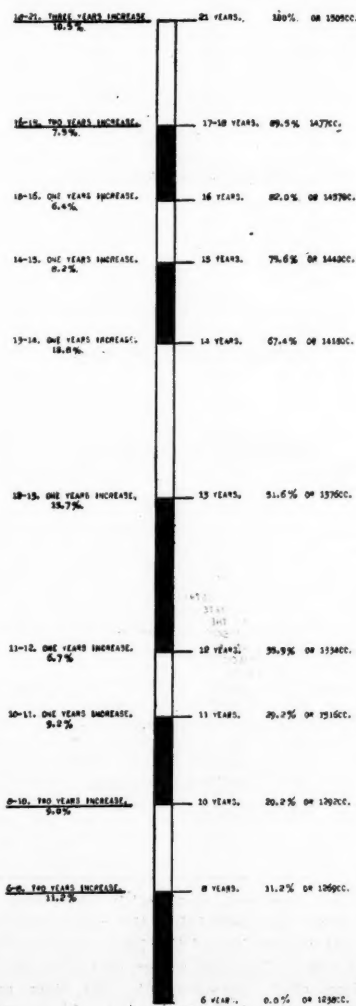


Diagram II.

men, then that of minor officials, then that of tradespeople and artisans, then that of minor officers, teachers, business people and musicians, and lastly that of students, officers, doctors, etc. Costa Ferreira had measured the cubic capacity by a method different from his own, and had found the order as follows: Persons of unknown occupation had

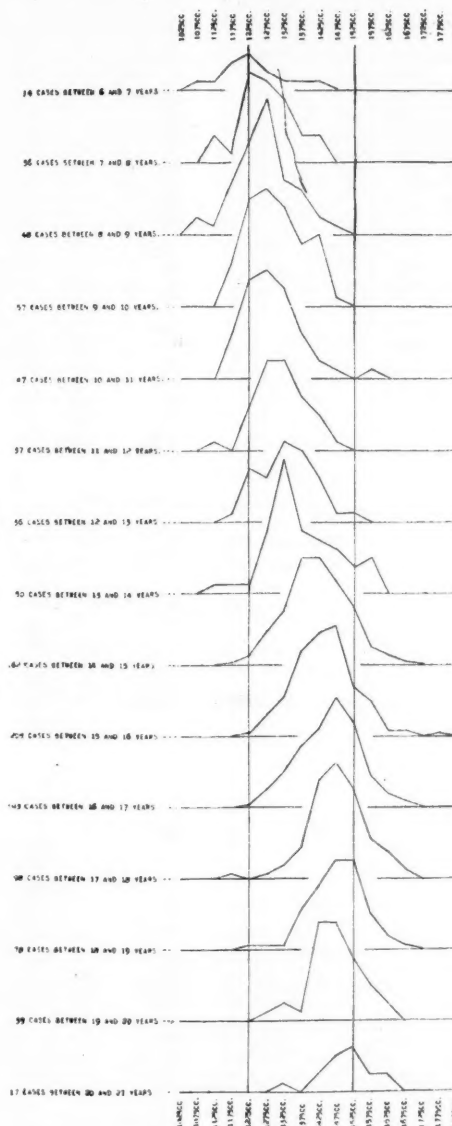


CHART ILLUSTRATING THE PROGRESSIVE INCREASE IN THE GROWTH OF THE BRAIN IN MALES BETWEEN THE AGES OF 6 AND 21 YEARS.

THIS CHART ILLUSTRATES THE APPRECIABLE INCREASE IN THE GROWTH OF THE BRAIN IN MALE SUBJECTS BETWEEN THE AGES OF 6 AND 21 YEARS AS DISCLOSED BY THE SHIFTING OF THE MODE THAT IS AT THE MOST COMMON RATE OF GROWTH AT THE DIFFERENT AGES. THE MODAL POINTS THAT IS THE APICES OF THE CURVES ARE SHOWN BETWEEN THE VERTICAL RED LINES AND THE HORIZONTAL RED LINES ARE TO THE RED LINE ON THE RIGHT THE CALLED IS THE CUBIC CAPACITY OF THE BRAIN.

Diagram III.

the lowest cubic capacity, then came house proprietors, daily labourers, workmen, public servants on the pension list, public servants and business men, and, lastly, members of the learned professions.

Professor Berry related the work done under his super-

vision by Dr. J. H. Anderson in the determination of the best method of calculating the cubic capacity of the cranial cavity in the living subject. The measurements recorded were the maximum length (M.L.), the maximum breadth (M.B.), the auriculo-bregmatic height (A.H.), the maximum horizontal circumference, the nasio-inial arc and the trans-

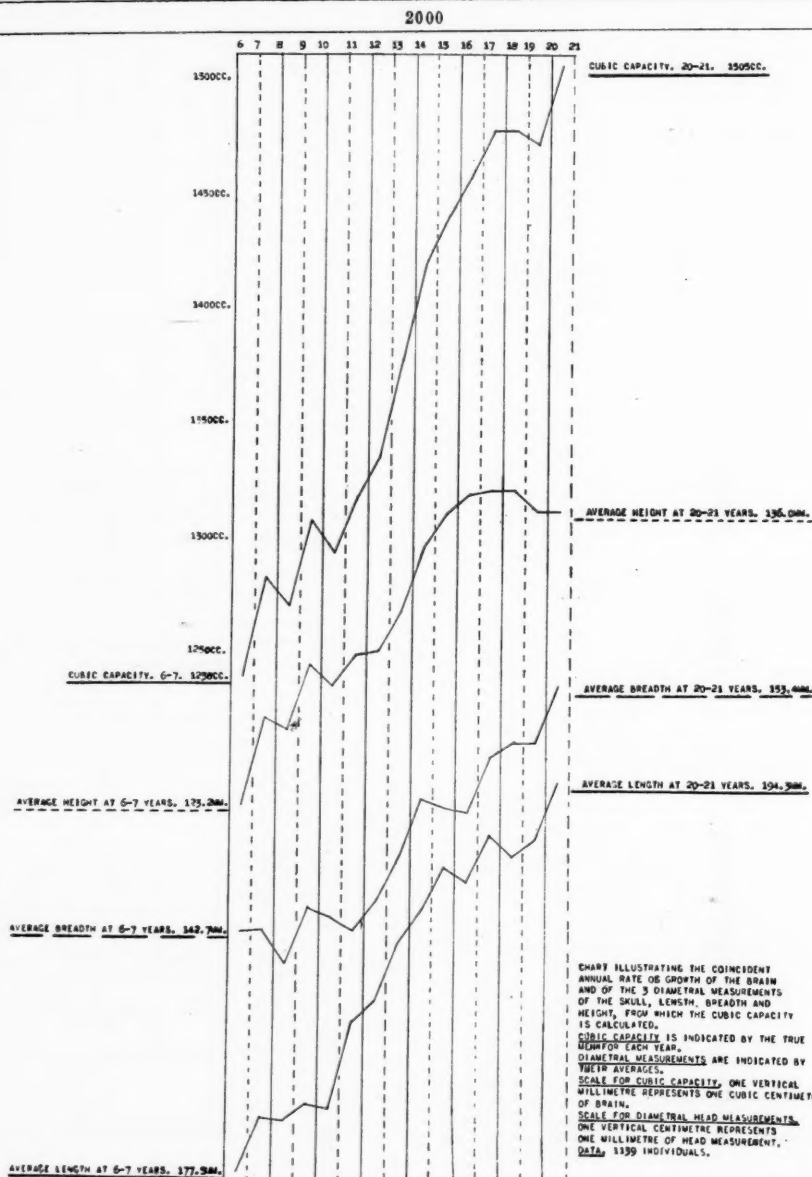
(2) Lee's method:—

Males c.c. = .000337 × (l—11) (b—11) (h—11) + 406.01
Females c.c. = .000400 × (l—11) (b—11) (h—11) + 206.60

The reasons why the formula of Lee was the one selected

(3) Beddoe's method:—

c.c. = $\frac{1}{2}$ circumference × $\frac{1}{2}$ nasio-inial arc × $\frac{1}{2}$ transverse arc + 0.3% for every unit of K.I. over 50



Curve IV.

verse arc. From these measurements the cubic capacity had been estimated by means of three formulæ.

(1) Pelletier's method:—

(M.L. — 10) × (M.B. — 10) × (A.H. — 8)
c.c. = $\frac{2020 \text{ (Males)}}{1940 \text{ (Females)}}$

for the research were next dealt with. Anderson tested the various methods of ascertaining the cubic capacity of the skull after the separation of the head from the trunk, and came to the conclusion that water measurement was more accurate than shot measurement. He then applied the water measurement and the estimated cubic capacity of the cranial cavity by the formulæ given above.

Serial No.	Sex.	Cephalic Index.	Cubic Capacity.		Actual.
			Estimated.	Lee.	
1	M.	78	1,633	1,418	1,510
2	M.	78	1,406	1,379	1,475
6	M.	82.2	1,633	1,483	1,618
11	F.	76.4	1,263	1,396	1,103
16	M.	78.8	1,576	1,440	1,560
17	M.	73.7	1,612	1,462	1,603
18	M.	77.5	1,677	1,506	1,750
19	F.	79.8	1,235	1,125	1,200
21	M.	81.5	1,481	1,376	1,440
22	M.	78.7	1,459	1,520	1,410
27	M.	77.8	1,451	1,356	1,450
33	M.	79.3	1,657	1,460	1,616
34	M.	81.7	1,663	1,497	1,610
37	F.	80.5	1,240	1,131	1,250
38	M.	77	1,623	1,406	1,650
3	M.	76	1,548	1,421	1,300
4	M.	81	1,555	1,426	1,427
5	M.	79.4	1,509	1,455	1,329
7	M.	74	1,479	1,393	1,350
8	M.	75.6	1,505	1,393	1,440
9	M.	82	1,559	1,425	1,426
10	M.	77.3	1,567	1,430	1,416
12	M.	84.5	1,621	1,486	1,366
13	M.	83.5	1,716	1,605	1,610
14	M.	85	1,772	1,572	1,430
15	F.	78.3	1,394	1,338	1,116
20	M.	81	1,891	1,623	1,360
23	M.	77.8	1,782	1,671	1,560
24	M.	78.6	1,872	1,629	1,670
25	F.	78.6	1,534	1,453	1,355
26	M.	83.4	1,844	1,647	1,616
28	M.	75.4	1,331	1,222	1,270
29	M.	76.1	1,620	1,469	1,410
30	F.	78.7	1,424	1,267	1,250
31	M.	79.8	1,945	1,686	1,580
32	F.	75.8	1,379	1,227	1,300
35	M.	80.7	1,474	1,372	1,406
36	M.	79.3	1,618	1,469	1,530
39	M.	77.5	1,670	1,523	1,510
40	M.	81.9	1,610	1,461	1,470

The results obtained by means of Lee's formula were more accurate than those obtained by Pelletier's, notwithstanding the fact that the reverse was true in the first 15 cases. Anderson's conclusions concerning the proportionate contents of the skull were: (1) The brain volume probably diminished with advancing age. (2) The variation in the volume of the brain was compensated by an inverse variation in the amount of cerebro-spinal fluid present. (3) The *dura mater* did not vary in proportionate volume with increasing age, nor with size of skull, but remained constant with a volume of from about 4.5% to 5.5%.

Professor Berry gave several reasons for refusing to employ circumferential measurements for the estimation of cubic capacity. He called attention to the fact that Anderson had discarded the circumferential measurements because all formulae in which these measurements were utilized yielded divergent results when compared with direct measurements. He proceeded to illustrate by means of lantern slides the mode of recording the diametral measurement of length, breadth and height of the head. The two former were effected by means of callipers, while the height was measured by the radiometer.

Having satisfied himself that the measurements interpreted in accordance with Lee's formula represented approximately the true cubic capacity of the cranial cavity, Professor Berry proceeded with the problems of the present investigation. For this purpose he had estimated the cubic brain capacity in the case of 1,164 normal living males, 1,126 of whom were between the ages of six and twenty-

one years. The results of these measurements are set forth in tabular form, as follows:—

Age.	No.	Minimum c.cm.	True Mean of c.cm.	Standard Deviation about Mean.	Maximum c.cm.	Annual Percentage Growth.
5	2	1,211			1,267	—
6	14	1,092	1,238 ± 15.09	88.34 ± 11.26	1,401	0%
7	36	1,106	1,281 ± 8.54	76.00 ± 6.04	1,426	—
8	48	1,065	1,269 ± 7.78	79.89 ± 5.50	1,471	11.2%
9	57	1,168	1,306 ± 7.13	79.74 ± 5.04	1,485	—
10	47	1,170	1,292 ± 7.92	80.51 ± 5.60	1,572	9.0%
11	37	1,135	1,316 ± 7.91	71.38 ± 5.59	1,459	9.2%
12	36	1,180	1,334 ± 8.83	78.55 ± 6.24	1,540	6.7%
13	50	1,138	1,376 ± 9.61	100.78 ± 6.79	1,597	15.7%
14	162	1,185	1,418 ± 4.57	86.34 ± 3.23	1,666	15.8%
15	208	1,213	1,440 ± 4.10	87.70 ± 2.90	1,766	8.2%
16	198	1,212	1,457 ± 4.20	87.78 ± 2.97	1,699	6.4%
17	98	1,184	1,477 ± 5.83	85.53 ± 4.12	1,698	—
18	78	1,233	1,477 ± 6.11	79.78 ± 4.32	1,685	7.5%
19	39	1,282	1,471 ± 8.34	77.24 ± 5.29	1,626	—
20	17	1,322	1,505 ± 11.52	70.35 ± 8.13	1,610	10.5%
21	14	1,402	—	—	1,634	—
22	12	1,400	—	—	1,669	—
23	2	1,428	—	—	1,474	—
24	4	1,363	—	—	1,523	—
25	2	1,455	—	—	1,528	—
26	1	1,486	—	—	1,545	—
28	2	1,541	—	—	1,545	—

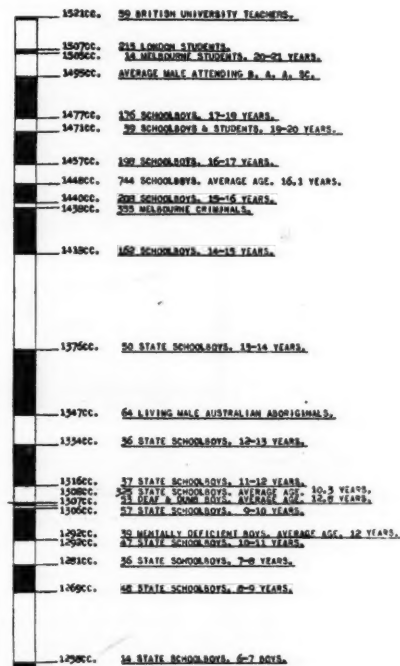


CHART ILLUSTRATING THE RELATIVE CUBIC CAPACITY OF THE MALE BRAIN IN—
 A. EDUCATED CLASS GROUPS AS E. G. BRITISH UNIVERSITY TEACHERS
 UNIVERSITY STUDENTS AND THE AVERAGE MEMBER ATTENDING THE
 MEETINGS OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT
 OF SCIENCE.
 B. SCHOOLBOYS AND UNIVERSITY STUDENTS AT ALL AGES FROM 6 TO 21 YEARS
 SHOWN BOTH IN YEARLY GROUPS AND IN GROUPS OF AVERAGE AGES.
 C. SOCIALLY INEFFICIENT GROUPS AS E. G. THE CRIMINAL.
 D. ABNORMAL CLASSES AS E. G. THE MENTALLY DEFICIENT AND THE DEAF
 AND DUMB.
 E. ONE PRIMITIVE AND NONCAUCASIAN RACE—THE LIVING PURE BREED
 AUSTRALIAN ABORIGINAL.
 SCALE: ONE VERTICAL MILLIMETRE REPRESENTS ONE CUBIC CENTIMETRE OF BRAIN.
 DATA: 1909 INDIVIDUALS EXCLUSIVE OF THE BRITISH ASSOCIATION MEMBERS
 THE NUMBERS OF WHICH ARE NOT KNOWN.

Diagram V.

In addition, the cubic capacity of the brains of 163 abnormal males had been calculated. These included 72 Australian aborigines, 38 mentally deficient children and 53 deaf and dumb individuals. In explaining the result obtained, Professor Berry pointed out that the rate of increase could be estimated from the true mean, or by the "mode."

Curve I. was shown to illustrate the annual increase, as determined by the two methods (see page 536). The notches in the curve at eight and ten years were probably due to the small number of observations. A rapid increase of cubic capacity occurred at or about the period of adolescence. The rate of increase could also be gauged from Diagram 2. Diagram 3 illustrated the shifting of the mode. He explained that the most frequently recorded cubic capacity for each age group tended to increase with increasing age.

In the next place Professor Berry analysed the data to show the relation between the increases in the three separate diametral measurements and the annual increase in the estimated cubic capacity.

It was seen that the rate of growth in the three diametral measurements was not regular and coincident, but that at any period the increase in cubic capacity was due to accelerated growth in one diameter more than another (each having its own period of special growth). Curve 4 represents the results of the analysis.

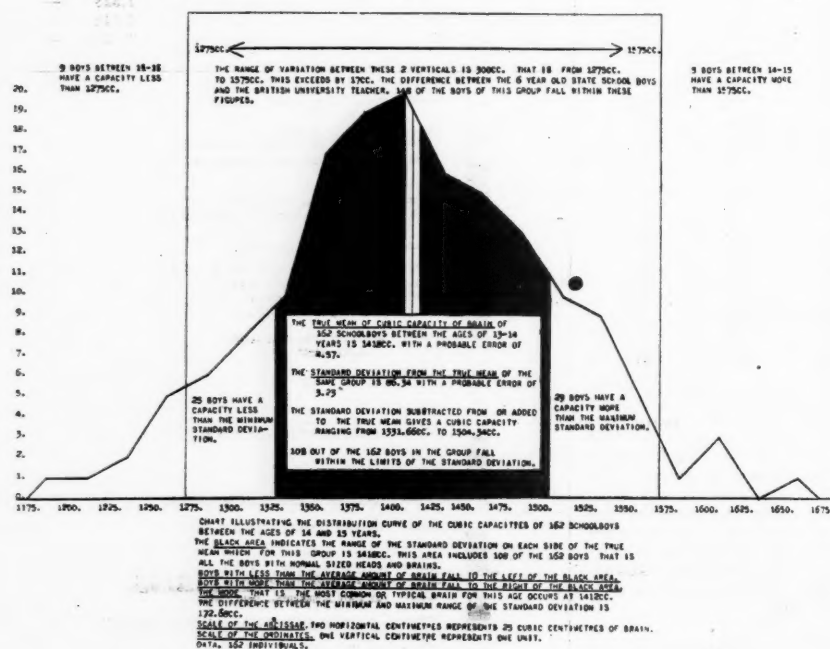


Diagram VI.

Karl Pearson had stated that the head growth was quick in the auricular heights of girls from three to six, and slow from 15 to 20. He had also stated that head breadth of boys was absolutely linear from 8.5 to 18 years, and that this held substantially for all head measurements. From Diagram 8 the members would be able to see that Pearson's contention was not borne out by the speaker's measurements. The estimate of annual increase in cubic capacity received support from the weight measurements of brain at different age periods. According to Boyd, the increase from 7 to 14 years was 69% of the total increase from 4 to 20 years. According to Professor Berry, the increase from 6 to 14 years was 67.4% of the total increase from 6 to 21 years.

In returning to the subject of a correlation between intelligence and size of head, Professor Berry showed that the average cubic capacity was relatively highest in the

educated classes as compared with school boys and university students, social inefficients, the abnormal classes and the Australian aborigines (see Diagram 5). It would be seen that the cubic capacity of mentally deficient boys of the average age of 12 was approximately equal to that of State school boys of between 9 and 10. Again, deaf and dumb boys of the average age of 12.8 years had approximately the same cubic capacity of brain as State school boys of 10.3 years. The cubic capacity of brain of Melbourne criminals was just smaller than that of school boys of from 15 to 16 years.

Professor Berry stated that it was usually accepted that no new neurones were formed after birth. On the other hand, collateral fibres tended to spring into existence as a result of education or exercise of function. He quoted Bayliss to show that the whole of the neurones which the adult animal was to possess were present at birth, and gradually took on functional activity. Every new acquirement in reflex or association was dependent on connexions having been established between neurones already present. He held that memory implied the more or less permanent establishment of these connexions. Bayliss admitted the possibility of disconnexion at a later period. Piersol had pointed out that there was sufficient evidence to believe that myelination of additional association fibres continued as long as intellectual effort was progressive, the demands made by education and special mental exercise being met

by a corresponding completion of additional association fibres. Professor Berry adduced other evidence in support of his contention that growth of brain meant increase in the number of association fibres, or in the amount of neuroglia. Piersol had found that the brains of not a few men of remarkable achievement in the fields of science, of letters and of art had been of a weight but little above, or sometimes even below, the average. It was not improbable that the cortical cells of different brains varied in their capacity for activity and in their capacity of retaining impressions. In other words, there might be a difference in quality.

Professor Berry then proceeded to pass his material in review. He stated that while it was clearly impossible to predict intelligence from head measurements alone, it was equally certain that, as they now knew, for the first time, the cubic capacity of the brain at any age between 6 and 21 and the range of normal variation therefrom, the possible abnormal types could be picked out with precision; and the

psychologist and the educationalist, from the data supplied, could form a better judgement than heretofore of the future intellectual possibilities of the individual. This was the real value of his work. It had placed in the hands of psychologists and educationalists a new weapon, which, rightly applied and used, must be of ultimate great service to the State.

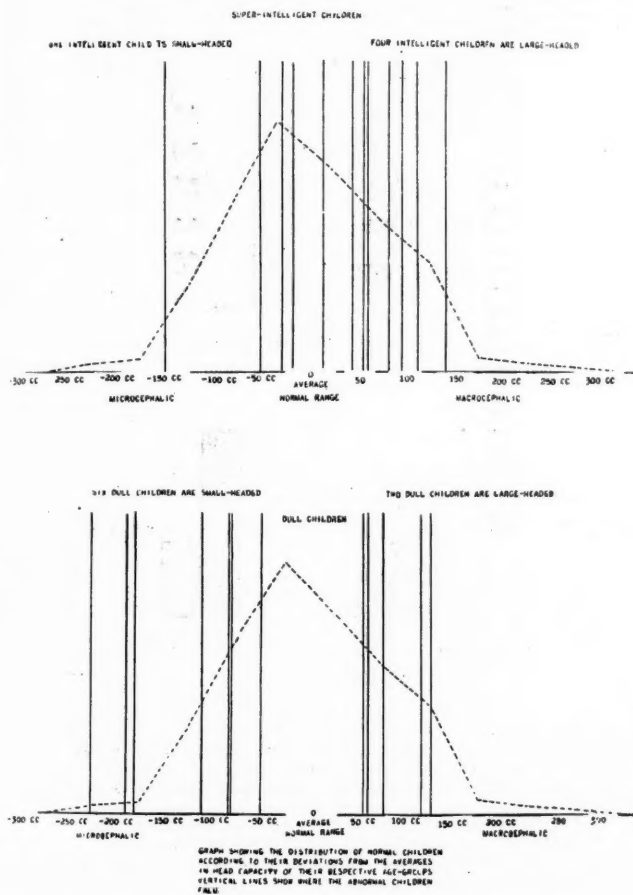
Although the work was necessarily incomplete, and required for its fructification a much more extensive series of observations, spread over a number of years, it was, even in its present incomplete form, at least suggestive, and raised the following problems:—

(1) In view of the wide individual range of variation which the work showed actually to exist between groups of schoolboys of the same age, was it not wrong to expect

every boy to pass the same grade of examination, or to try to force him through the examination?

(2) In view of the remarkably rapid increase in brain growth at, and immediately after, puberty, did not this raise the question of the unwisdom of holding public examinations, which necessarily demanded an intensive system of "cram" at the very worst possible moment of life?

On the other hand, might not the fact of this apparent developmental spurt provide a powerful argument for the State to continue compulsory education up to the sixteenth year of life, at which period 82% of the ultimate brain growth from six to 21 was completed, as against the 67.4% at the present system? And if this education were practised and well ordered and entirely devoid of education "cram," would not mental occupation under wise control



Curve VII.

contribute toward steadiness in character at a time when there was great mental instability, consequent on such important cerebral changes?

(3) Should not every candidate who entered a university for a professional career, or who embarked on any of the higher State services, be physically and mentally tested with a view to the elimination of the socially inefficient?

(4) In view of the strong probability that the majority of the people of a State left school before their brains had attained their full possible maturity, and consequently were not sufficiently educated at any period of their lives, was not modern democracy wrong in adopting universal suffrage without adequate mental preparation? Would it not be better to recognize that science and the safety of the State alike demanded that Robert Low's celebrated dictum of "Now we have to educate our masters!" should

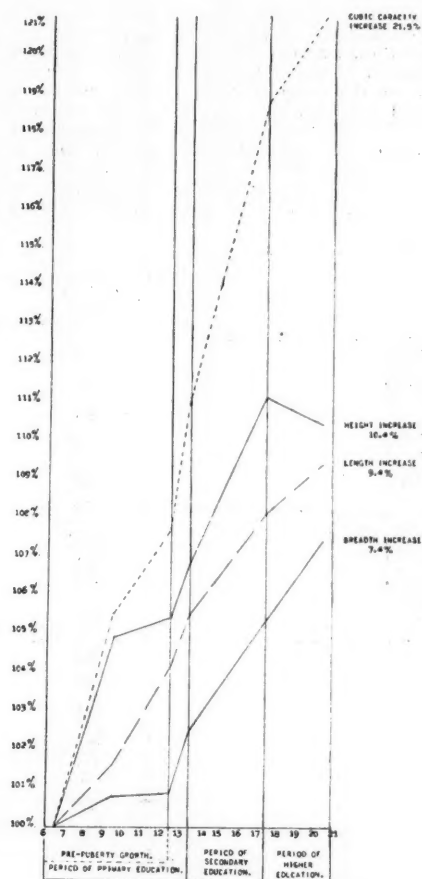


Diagram VIII.

be put into immediate operation? Did not post-war consequences render this more imperative than ever?

(5) Professor Karl Pearson, Galton Professor of Eugenics in the University of London, has stated, as recently as 1914, that "We have now to recognize that we are really on the fringe of the biggest problem of the modern State, the question of social inefficiency." Should not the State, therefore, make every possible endeavour to prosecute this work to its ultimate and logical conclusion, that is, to co-operate the services of the anthropologist, the psychologist, the educationalist and the medical man, in a great national endeavour to discover from amongst the school inefficient the future social inefficient of adult life, and to do so in the only possible way, by the foundation and maintenance of a special laboratory for the purpose?

Mr. S. D. Porteus, Lecturer on Experimental Education in the University of Melbourne, read a paper on the bearing of head measurements on psychological problems. He stated that it was the great fault of child education that there was but little attempt to adapt the individual's training to his special needs. They were in the habit of applying the same system of education to all children, regardless of their different intellectual endowment. The future criminal and the potential genius might be found side by side in the same class, under the same teacher.

He held that before an attempt could be made to detect abnormality, they must know what the normal limits were. Professor Berry had explained in a thoroughly convincing

manner that wide differences separated the various classes in the community. It was for the psychologist to determine whether these average differences were of any value in the examination of the abnormal individual. For the purpose of gauging the value attached to these differences, he had examined 1,000 school children by two series of mental tests. The tests were applied for the purpose of obtaining an estimate of each child's intelligence. The first series was the famous Binet scale, which covered a wide range of intellectual activities, such as memory, judgement, common knowledge, reasoning, etc. The second series used

intelligent were also outside the normal limits, he concluded that small-headedness was of more significance from the standpoint of diagnosis.

An examination of the data concerning 355 criminals collected and published by Professor Berry and Buchner

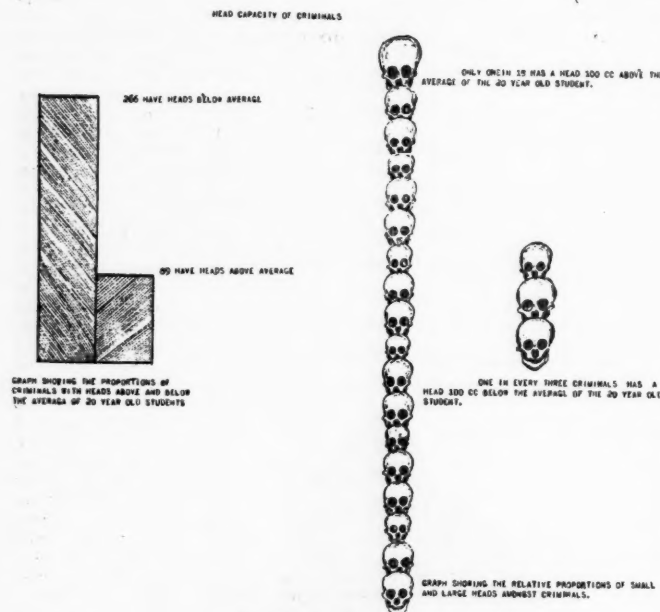


Diagram IX.

was his own motor intelligence tests, which assessed prudence, foresight and mental alertness generally. These tests were widely used by psychologists elsewhere. By combining the results of these two series of tests, a reliable estimate of intelligence could be made. The head capacities of 500 of the children were then measured, and compared with the intelligence estimates.

Treating the results obtained mathematically, Mr. Porteus found a correlation which in some age groups was four times as high as that found by Professor Karl Pearson. Pearson, however, did not use mental tests, but relied on the teachers' estimates of intelligence. The teachers were required to divide their children into five classes: quick intelligent, intelligent, slow intelligent, dull and very dull. Mr. Porteus regarded this as a difficult and unreliable classification.

In addition to treating the results mathematically, Mr. Porteus had used the data in another way by selecting 24 children who were abnormal in intelligence, and comparing their head capacities with the average of their respective age groups.

Diagram 7 showed that only one out of the number of superintelligent children possessed a brain capacity below the normal limits of its age group, whilst four had heads above those limits. The range of normality was taken, in this case, as extending 80 c.cm. above the actual mean of each age group.

In the case of the very dull children the reverse tendency was noticeable. There were six with very small heads and two with large heads. Since 66% of the very dull children fell outside the normal limits, whilst 41% of the super-

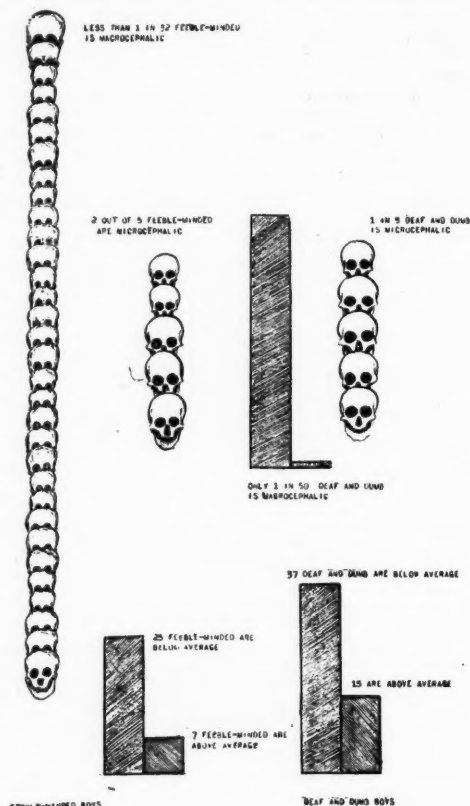


Diagram X.

confirmed this view. Diagram 9 illustrates the result of this examination. Only one in every eighteen criminals had a head capacity 100 c.cm. above the mean capacity of the 20-year-old student, whilst one in every three was over that amount below that mean.

Diagram 10 was used for the purpose of demonstrating the frequency of heads approaching microcephaly among the feble-minded and the deaf and dumb.

The psychological evidence went to show that the differences in the averages of head capacity between the classes were significant from the standpoint of intelligence. Deaf and dumb children were found to be about two years below the average. A group of youthful criminals had also been examined, and were shown to be five years retarded in intelligence. These deficiencies in intelligence corresponded very closely with the amount of cerebral deficiency indicated by Professor Berry's measurements.

Other physical and mental tests were of value for the diagnosis of mental defect. Feble-minded children were below the normal in stature, in right and left hand grip and vital capacity. It was only by combining tests that the future social inefficient might be recognized.

Mr. Porteus held that head measurements might provide another method of approaching the problem. There was

no doubt of the keen value, from the standpoint of psychology, of such research studies as the one that had been initiated by Professor Berry. This and similar problems of intense interest could be finally settled only through the work of a properly established psychological laboratory.

Mr. L. A. I. Maxwell, Lecturer on Physiology in the University of Melbourne, said that there appeared to be a close connexion between function and development of the brain. The cells of the grey matter of the cerebral cortex could be divided into three layers: (a) inner or polymorphic layer, (b) middle or granular layer, (c) outer or pyramidal layer.

The polymorphic layer was the first to appear in the animal kingdom, was also the first to appear in the developing human infant, and was the most primitive of the three. At birth it had practically attained its maximum development, and as to its function, there was considerable evidence to show that this layer was concerned with animal instincts, such as the getting of food, self-protection, and sexual reflexes. The middle or granular layer developed later, and at birth had attained three-fourths of its maximum adult depth. It had to do with the reception of afferent impressions, and was found well developed in the visuo-sensory regions of the brain.

The outer or pyramidal layer was the last to develop, both phylogenetically and ontogenetically. This layer was of the most importance, the greatest in thickness, and in human adults showed considerable variation. This layer in the human being was developed to the extent of one-half only at birth. Thus at birth (a) the polymorphic layer was almost completely developed, (b) the granular or sensory layer was 75% developed, and (c) the pyramidal layer was about 50% of adult development.

The pyramidal layer was concerned with the higher psychical activities of the individual. The reflexes that occur through the polymorphic layer were, as stated, of the nature of protective reflexes, the seeking of shelter, the acquisition of food, and sexual reflexes. The question then arose as to whether the neurones increased in size as the result of activity. It had been shown experimentally that if an animal normally born blind had its eyelids separated in one eye only and light let in, the optic nerve fibres were thus stimulated, and it was found that the myelination in the neurones of the central connexions of the optic nerve fibres of this eye was much more rapid than in the case of the other eye. This result was in line with Professor Berry's theory. The question arose as to what occurred at the age of puberty. As shown by the graphs, there was a great growth of the brain substance, and this growth took place mainly between the ages of 12 and 16 years, at which period it was thought a physiological hypophyseal hyperplasia probably occurred.

In education at the age of puberty reflexes were transferred from the polymorphic layer to the pyramidal layer. That really was the purpose of education. The function of the pyramidal layer was largely the inhibition of animal reflexes through the polymorphic layer. If the pyramidal layer were not well exercised, the reflexes would tend to revert to the polymorphic layer, and the life of the individual would continue on this low grade of animal existence, and he would often show marked sexual activity. By education impulses were transferred from the lowest layer, which had been in existence for many years and was the most stable, to the outer or pyramidal layer, which was less stable and more liable to dissolution and sub-evolution from the mental standpoint.

If by excessive education the outer layer was over-stimulated at puberty it would be liable to extreme fatigue in its synaptic junctions, and reflexes would probably tend to pass more through the inner layer. When the transference took place from the polymorphic to the pyramidal layer, neurones which had a potentiality for growth were stimulated. This was an important point. By education a growth in size of neurones was probably produced by increasing the ramifications of the collaterals and dendrites, and by increasing the diameter of the myelin sheaths.

In conclusion, Mr. Maxwell stated that if education accomplished anything, surely it was responsible for the transference of the majority of the reflexes of daily life from the polymorphic to the pyramidal layer of nerve cells, which

were capable of growth and which attained the maximum of development in the pre-frontal cortex, to which might be assigned the latest and most highly evolved functions of voluntary attention and inhibition and of selection and co-ordination of the various complex process of cerebral association.

Dr. A. Jeffreys Wood stated that, in considering the question of the size of the head and mental capacity, it was well to remember that among the clinical varieties of secondary amentia there was a class of children and young adults that were commonly said to be suffering from hypertrophy of the brain. This condition, however, concerned the interstitial tissue of the brain only, and not the cerebral neurones. It was a diffuse gliosis. When neuroglial overgrowth was present to any considerable extent, it produced a marked increase in the weight, consistence and size of the brain, and also an enlargement of the skull. Dr. Fletcher Beach had found the brain of a boy, who had died at the age of 15 years, weighing 62 ounces (1,755 grammes). The skull of these aments was square in shape, and the greatest circumference was at the level of the superciliary ridges. The skull was therefore readily differentiated from the hydrocephalic skull, which had its greatest measurement over the temporal region, giving it its top-heavy appearance. The bulging fontanelle seen in hydrocephalus was absent in these cases of hypertrophy of the brain. Dr. Tredgold, in his book on "Mental Deficiency," had given a complete history of a boy who had suffered from this form of dementia. The boy had been normal in every way up to the age of three years, when he had had an obscure fever, with great pain in the head. He had gone to school at the age of seven and had left school at the age of 15, when he was in the fourth standard. His mother had said that he was dull and not up to the work of this standard. He had had six fits at nine years of age, and others at 12 years of age, when it was noticed that he was unsteady in standing and walking. The head enlargement was first noticed at nine years. At 15 years he was undersized, but fat. The circumference of his skull, at the level of the supra-orbital ridges, was 23 inches; there was no asymmetry, and there were no prominences. The fontanelles were closed. The signs of puberty were advanced. No actual paralysis was present, but the left arm and leg were weaker than the right. The knee-jerks were not obtainable. Constant irregular jerky movements were present, especially on the left side. He conversed rationally, though his speech was thick, slow and hesitating. He read and wrote well, but was poor at sums. His mental state was one of mild feeble-mindedness. At 21 years he could clean a pair of boots in an hour, but if hurried a general muscular tremor would set in that made work impossible.

The consistence of these brains was extremely dense, in fact, almost like cartilage, the white as well as the grey matter being the site of a dense, diffuse sclerosis.

Dr. Wood had mentioned this class of feeble-minded children, as it had a direct bearing on the subject of Professor Berry's paper. The work Professor Berry had put into this subject was known only to those who had been brought into contact with him in connexion with the research. The importance of the results that would probably eventuate from these studies would be measured, to a large extent, by the wideness of the application by others of the methods adopted by him. The work could not have been done without the aid of a calculating machine. Dr. Wood urged him to issue for the use of medical men and teachers reckoning tables by which the operator could in a very short time take the three necessary measurements of the skull, and by referring to the table read off the result, and so be able to say whether the subject falls within the normal limits. The tables could be produced with the assistance of the Education Department. By thus relieving the examiner of the drudgery of mathematical calculations, the work could be popularized, and a far larger series of observations would be available for deduction in the near future.

A short discussion followed, in which Drs. E. F. O'Sullivan, J. W. Tarleton and Felix Meyer took part.

Dr. R. L. McAdam thanked Professor Berry, Mr. Porteus and Mr. Maxwell for their interesting lectures. He held

that the work would be of world-wide importance if the results were verified upon further investigation. He spoke with admiration of the thoroughness of Professor Berry's work, and stated that the results already achieved were remarkable.

A clinical meeting of the New South Wales Branch was held on May 11, 1917, at the B.M.A. Building, 30-34 Elizabeth Street, Sydney. Dr. R. Gordon Craig, the President, in the chair.

Dr. H. R. Sear gave a demonstration, illustrated by radiograms and diagrams projected on the screen, on the types and frequency of various fractures of the ankle joint. His remarks will be found on page 526.

Dr. J. G. Edwards said that he was glad to notice that Dr. Sear had avoided the use of the term "Pott's fracture" in his classification. Bennett's fracture, Pott's fracture and Colles's fracture were the only three fractures which were still called by the name of the surgeon who first described them. He thought these terms should be dropped. He spoke of the necessity of radiographing these fractures in two planes. In the next place he referred to his own experience in 1916, which extended over a series of 364 injuries to the ankle joint. Of these, 140 were fractures. The external malleolus was fractured in 36.5%, both malleoli were fractured in 20%, the internal malleolus was fractured in 13.5%, and there was a so-called "Pott's fracture" in 9%. Epiphyseal separation was met with on several occasions. In 15% of the cases there were some tarsal injuries. In fractures of the tarsus he advocated examination by means of X-rays in three planes. The condition known as *os trigonum* was frequently mistaken for fracture of the astragalus.

Dr. R. Gordon Craig advocated the use of anatomical names for fractures. There was considerable confusion arising out of the use of the term "Pott's fracture" for a variety of conditions. The fracture described by Pott consisted in a fracture of both the fibula and the external malleolus, with posterior dislocation. He congratulated Dr. Sear on his very valuable series of radiograms.

Dr. R. Worrall described a case of cancer of the cervix *uteri* following subtotal hysterectomy. (See page 530).

Dr. S. Sheldon referred to a case in which he had performed subtotal hysterectomy eight years before. He had witnessed an operation by Dr. Worrall a year before, which had opened his eyes. The patient referred to had turned up with an inoperable carcinoma of the stump of the cervix.

Dr. H. Bullock referred to a case of extensive malignant disease of the cervix and adjacent tissues, which had been dealt with by radium. The whole uterus together with the cervix, had been removed, and radium had been applied to the scar. Examination of the specimen showed that there was a carcinoma of the left side of the cervix. The patient had made a good recovery, and was in perfect health.

Dr. George Armstrong did not agree with Dr. Worrall in regard to the indications for total hysterectomy. If there was reason to remove the cervix, it should be done; but if the cervix, after careful examination, proved to be healthy, it should be left alone. He thought it was very unwise to allow the opinion to be spread broadcast that the complete operation should be done in all cases. In reference to Dr. Bullock's case, he expressed a doubt whether radium had contributed at all to the satisfactory result. There was not enough radium in Australia for therapeutic effects to be produced.

Dr. R. Gordon Craig asked Dr. Worrall whether he had had any material trouble from ureteral stricture, or from kidney involvement in the operations he had performed. His experience had led him to the conclusion that some cicatricial contraction of the ureter not infrequently followed these operations. He recognized, however, that hysterectomy in the majority of cases was a life-saving operation, and that certain risks associated with it must be accepted.

Dr. Worrall wished to emphasize the distinction between a total hysterectomy performed for non-malignant disease and Wertheim's operation performed for malignant disease. He performed total hysterectomy for non-malignant disease only when there was injury or disease of the cervix. When the cervix was healthy, subtotal hysterectomy could be

applied with safety. He dealt with the frequency with which the cervix or the cervical endometrium was affected, and pointed out that von Winckel and others, in writing on this subject, had mistaken this condition for a corporeal endometritis.

In reply to Dr. Craig, he referred to his case of double ureter in which one had been divided on each side. (See *The Medical Journal of Australia*, July 4, 1914, page 7). His patient had survived the operation for three years and six months. The divided ureters had been implanted into the bladder. The patient died from recurrence high up in the pelvis.

Dr. C. E. Corlette gave a demonstration of two new operations for amputation of the foot through the tarsus, and demonstrated a patient in whom one of these operations had been performed. The object of the demonstration was primarily to ask the members present to make suggestions in regard to the best form of support for the stump and boot. We are informed by Dr. Corlette that he will publish a description of his operations in this Journal at an early date. The members present expressed the opinion that Dr. Corlette's operation was an extremely valuable one.

Francis John Graham, L.M., L.R.C.P., Irel, 1910, L.M., L.R.C.S., Irel, 1910, of Dural Street, Hornsby, has been nominated for election as a member of the New South Wales Branch.

Naval and Military.

The 310th, 311th and 312th lists of casualties, issued on June 13, June 15 and June 18, 1917, respectively, contain in all the names of 2,837 members of the Australian Imperial Force. The number of those who have lost their lives is 368, and of the wounded is 1,497. We regret to note that Major Norman John Bullen and Captain Victor Marcus Coppleson are among the wounded. The latter is remaining on duty. Among those ill in hospital are Major Fergus McIntyre and Captain Frank Boothroyd.

We regret that through an oversight the name of Major Herbert L. St. Vincent Welch was omitted from the list of officers who received the Distinguished Service Order on the occasion of His Majesty the King's Birthday. We tender him our sincerest congratulations. We have also great pleasure in recording that the following officers of the Australian Army Medical Corps have been awarded the Military Cross:—

Major Gladstone Montague Hunt,
Captain William Robert Aspinall,
Captain Ronald Lennox Henderson,
Captain William Duncan Kirkland,
Captain Harry Herbert Lee,
Captain Stanley Vincent O'Regan, and
Captain Hugh Alexander Wyllie.

The following announcements appear in the *Commonwealth of Australia Gazette*, No. 89, under date of June 14, 1917:—

Australian Imperial Force.

Appointments, etc.

His Excellency the Governor-General, acting with the advice of the Federal Executive Council, has been pleased to approve of the following changes, etc., in connexion with the Australian Imperial Forces, viz.:—

Army Medical Corps.

To be Major—
Alfred Edward Rowden White. Dated 6th June, 1917.

To be Captains—

Honorary Captain H. C. Disher, Australian Army Medical Corps Reserve. Dated 28th April, 1917.
Honorary Captain E. S. Joske, Australian Army Medical Corps Reserve. Dated 3rd May, 1917.
Honorary Captain R. L. Park, Australian Army Medical Corps Reserve. Dated 16th May, 1917.
Honorary Captains H. R. Hyett, A. W. Bowman and C. Friend, Australian Army Medical Corps Reserve. Dated 17th May, 1917.
Cecil Uren. Dated 1st May, 1917.
Percy Alan Earnshaw. Dated 5th May, 1917.

Percy Alexander Morris and Francis George Travers
Champion de Crespigny. Dated 11th May, 1917.
Charles Mitford Lilley and Reginald Edward Now-
land. Dated 14th May, 1917.

Robert Algernon Fox. Dated 15th May, 1917.
The appointments of the undermentioned officers are
terminated from dates stated opposite names:—

Lieutenant-Colonel E. B. Allan. Dated 21st May,
1917.

Major A. Grant. Dated 14th May, 1917.

Captain G. H. S. Dobbyn. Dated 15th May, 1917.

Captain W. A. James. Dated 15th May, 1917.

Captain F. M. Bradshaw. Dated 22nd May, 1917.
Army Medical Corps.

To be Colonel—

Lieutenant-Colonel (temporary Colonel) C. H. W.
Hardy, D.S.O., V.D. Dated 30th November, 1916.

To be Lieutenant-Colonel—

Major (temporary Lieutenant-Colonel) K. Smith.
Dated 7th November, 1916.

Majors S. S. Argyle, E. B. Allen and J. E. Dodds,
D.S.O., M.C. Dated 27th January, 1917.

Major D. M. McWhae, from No. 2 Command Depot,
to be Assistant Director of Medical Services,
Australian Imperial Force Depôts in United
Kingdom (temporarily), and is granted the tem-
porary rank of Lieutenant-Colonel whilst hold-
ing the appointment. Dated 10th January, 1917.

Australian Military Forces.

3rd Military District.

Australian Army Medical Corps Reserve—

Honorary Lieutenant-Colonel S. S. Argyle to be
Consulting Radiologist and Hydro-Electro
Therapeutist. Dated 14th May, 1917.

Honorary Captain R. Watson to be granted tem-
porary rank and pay of Major at rate prescribed
by Financial and Allowance Regulation 340
whilst holding position of Bacteriologist. Dated
1st June, 1917.

Honorary Captain B. Foster to be granted tempo-
rary rank and pay of Major at rate prescribed
by Financial and Allowance Regulation 340
whilst holding the position of Aurist at No. 5
Australian General Hospital (part time). Dated
1st June, 1917.

Lieutenant G. Beith, Retired List, to be Secretary,
No. 11 Australian General Hospital (temporary),
with pay at rate of £250 per annum, inclusive
of all allowances except travelling, whilst hold-
ing such appointment. Dated 22nd March, 1917.

4th Military District.

Australian Army Medical Corps—

Major (temporary) H. M. Jay to be Secretary and
Registrar, No. 7 Australian General Hospital,
with temporary rank and pay of Major, at rate
prescribed by Financial and Allowance Regu-
lation 340 whilst holding such appointment.
Dated 16th May, 1917.

The temporary appointment of Lieutenant W. S.
Poole as Secretary, No. 7 Australian General
Hospital, is withdrawn. Dated 15th May, 1917.

The temporary appointment of Honorary Lieuten-
ant F. W. Young as Secretary, No. 7 Australian
General Hospital, is terminated. Dated 15th
May, 1917. (This cancels the notification re-
specting this officer which appeared in Execu-
tive Minute No. 272 of 1917, promulgated in
Commonwealth of Australia Gazette, No. 66, of 3rd
May, 1917.)

AUSTRALIAN ARMY MEDICAL CORPS COMFORTS FUND.

Our appeal for subscriptions to the Australian Army
Medical Corps Comforts Fund for the particular purpose
of supplying Christmas parcels to the men on active ser-
vice abroad has met with very little response. The cost
entailed of sending each man a parcel is very considerable,
but it could be easily covered if every medical man were
to send a trifle which he would otherwise fritter away for
some personal comfort. There are approximately 2,400

members of the British Medical Association at present in
Australia. It is our desire to hand £500 over to the Aus-
tralian Army Medical Corps Comforts Depot. If everyone
would subscribe, we would be content with 4s. from each
member, but as this ideal is not likely to be realized, we
hope that some of the contributions will be a little larger.
Up to the present we have received £6 6s.

	£	s.	d.
Amount previously acknowledged . . .	3	3	0
The Hon. J. L. Beeston (Newcastle) . .	3	3	0

We ask members to accept publication in this column as
an acknowledgement of the receipt of the contribution.

VENEREAL DISEASE IN BRISBANE.

Our attention has been called to a misstatement concern-
ing the incidence of venereal disease in Queensland. We
stated, on May 26, 1917 (page 477), that "the Commissioner
apparently regards the figures given in the 12 months end-
ing June 30, 1914, as normal for the State." In view of the
fact that venereal diseases are notifiable only in the metro-
politan area of Brisbane, the word "State" should be re-
placed by the phrase "metropolitan area of Brisbane." The
population of the area referred to is 161,938.

Correspondence.

THE REFERENDUM.

Sir,—In your leader of the Referendum in the last issue
of the *Journal* you rightly state that the medical man
"should be prepared to place himself unreservedly in the
hands of the authorities and be willing to carry out any
service required of him." That attitude is absolutely essen-
tial from a military point of view—there is no other way.
The difficulty which besets many married men who are
anxious to do the right thing is how they are going to make
financial arrangement for an indefinite period of active ser-
vice. One takes it for granted that the Federal Committee,
before deciding to hold the Referendum, evolved some
scheme to overcome the difficulty referred to. I feel sure
that it would be a great relief to many, and assure a unani-
mous affirmative vote if the Federal Committee at once
made a clear statement on the following questions:—

- (1) The method to be adopted of financing men on ac-
tive service.
- (2) The system of calling up men for active service.
- (3) The composition of the Board of Control dealing
with (1) and (2).
- (4) The relief of men who have been on active service
since the war began.

It may be argued that all details might well be left until
after the Referendum has been taken, but one fears that,
unless care is taken to remove any doubt from the minds
of members, the vote may not be as satisfactory as we all
hope. It is to be regretted that the medical men at present
on active service will not have an opportunity of voting.
After the large negative vote on the question of general
conscription and corresponding disgrace we medical men
of New South Wales must seize the opportunity of showing
that we are prepared to do our share loyally for the Empire.

Yours, etc.,

ARCHIE ASPINALL.

Sydney, June 9, 1917.

Proceedings of the Australasian Medical Boards

NEW SOUTH WALES.

The following have been registered under the provisions
of "The Medical Act, 1912 and 1915," as duly qualified medi-
cal practitioners:—

Small, Dudley Stewart, M.B., 1917, Univ. Sydney.

Rowbotham, Edgar Joseph, M.R.C.S., Eng., 1894; Lic. R.
Coll. Phys., Lond., 1894.

Additional Registration.

Hodgkinson, Henry Richard, Mast. Surg., 1915; Univ.
Sydney; F.R.C.S., Edin., 1916.

Cuthbert, Harold William, Mast. Surg., 1917, Univ.
Sydney.

Births, Marriages, and Deaths.

The charge for inserting advertisements of Births, Marriages and Deaths is 5s., which sum should be forwarded in money orders or stamps with the notice, not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

BIRTH.

BROWN—On May 20, 1917, at Konetta Nursing Home, North Adelaide, to Dr. and Mrs. Gilbert Brown, of Snowtown—a son.

Medical Appointments.

Dr. Edward McDonald has been appointed Officer of Health for the North, South and Rockband Ridings, Shire of Melton, Victoria.

Dr. Morris Jacobs has resigned his position as Officer of Health for that part of the Shire of Gordon east of the Loddon River, Victoria, and Dr. Nigel Lovat Prichard has been appointed in his stead.

Dr. Walter Terence Joseph Harris has been appointed Government Medical Officer at Pambula, New South Wales, Dr. J. F. G. Fitzhardinge having resigned.

During the absence on leave of Dr. Blackburne, Dr. A. C. Everard has been appointed Acting Quarantine Officer, Albany, Western Australia.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xvii.

Brisbane Hospital, Junior Resident Medical Officers.

District Hospital, Ballara, Queensland, Medical Officer.

Dunwich Benevolent Asylum and **Inebriate Institution**, Medical Superintendent.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
TASMANIA.	
(Hon. Sec., Bel- lerville, Tasmania.)	Medical Officers in all State-aided Hospitals in Tasmania.
VICTORIA.	
(Hon. Sec., Medi- cal Society Hall, East Melbourne.)	Brunswick Medical Institute. Bendigo Medical Institute. Pahran United F.S. Dispensary. Australasian Prudential Association Pro- prietary, Limited. National Provident Association. Life Insurance Company of Australia, Limited. Mutual National Provident Club.
QUEENSLAND.	
(Hon. Sec., B.M.A. Building, Ade- laide Street, Bris- bane.)	Medical Officers to the Selwyn Hos- pital, North Queensland. Brisbane United Friendly Society In- stitute. Warwick Hospital.

Branch.

SOUTH AUS- TRALIA.

(Hon. Sec., 3
North Terrace,
Adelaide.)

WESTERN AUS- TRALIA.

(Hon. Sec., 230
St George's Ter-
race, Perth.)

APPOINTMENTS.

The F.S. Medical Assoc., Incorp.,
Adelaide.

Swan District Medical Officer.
All Contract Practice Appointments in
Western Australia.

NEW SOUTH WALES.

(Hon. Sec., 30-34
Elizabeth Street,
Sydney.)

Australian Natives' Association.
Balmain United F.S. Dispensary.
Canterbury United F.S. Dispensary.
Leichhardt and Petersham Dispensary.
M.U. Oddfellows' Med. Inst., Elizabeth
Street, Sydney.
Marrickville United F.S. Dispensary.
N.S.W. Ambulance Association and
Transport Brigade.
North Sydney United F.S.
People's Prudential Benefit Society.
Phoenix Mutual Provident Society.
F.S. Lodges at Casino.
F.S. Lodges at Lithgow.
F.S. Lodges at Parramatta, Penrith,
Auburn and Lidcombe.
Newcastle Collieries — Killingworth,
Seaham Nos. 1 and 2, West Wall-
send.

NEW ZEALAND: WELLINGTON DIVISION.

(Hon. Sec., Wel-
lington.)

Friendly Society Lodges, Wellington.
N.Z.

Diary for the Month.

- June 26.—N.S.W. Branch, B.M.A., Medical Politics Com-
mittee, Organization and Science Committee.
- June 27.—Vic. Branch, B.M.A., Council.
- June 29.—S. Aust. Branch, B.M.A., Branch.
- June 29.—N.S.W. Branch, B.M.A., Branch.
- July 3.—N.S.W. Branch, B.M.A., Council (Quarterly).
- July 4.—Vic. Branch, B.M.A., Branch.
- July 6.—Q. Branch, B.M.A., Branch.
- July 10.—Tas. Branch, B.M.A., Council and Branch.
- July 10.—N.S.W. Branch, B.M.A., Ethics Committee.
- July 12.—Vic. Branch, B.M.A., Council.
- July 13.—S. Aust. Branch, B.M.A., Council.
- July 13.—N.S.W. Branch, B.M.A., Clinical.
- July 17.—N.S.W. Branch, B.M.A., Executive and Finance
Committee.
- July 18.—W. Aust. Branch, B.M.A., Branch.
- July 20.—Q. Branch, B.M.A., Council.
- July 20.—Eastern Suburbs Med. Assoc. (N.S.W.).
- July 21.—Northern Suburbs Med. Assoc. (N.S.W.).

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this Journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney, New South Wales.

